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COMPUTERWORLD

Brand loyalty no longer name of the game in PCs

BY CAROL HILDEBRAND
CW STAFF

Having reached pricing parity with their new lines of personal computers, IBM and Compaq Computer Corp. now face another hurdle: savvy users who are no longer willing to stick with one vendor based on name alone.

The two companies have embarked on somewhat similar strategies aimed at bumping up volume through a three-pronged attack that will sell differently configured PC lines through various distribution channels, but users said adding value to the mix is vital.

"I have end users who would rather have clones than an IBM machine," said Ben Berry, manager of computer services at Hughes Aircraft Co. "The company has just been in a position of negative mind share for so long that users shy away from it now in many cases."

One thing is certain: Brand-name loyalty is largely a thing of the past. These days, users expect a lot more than a big name to secure their fidelity. For example, the two companies' previous insistence on taking the high-margin road with their products had users walking away in hordes; it will take a lot more to bring them back.

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Changing allegiances

Of the sites surveyed that consider IBM their primary PC vendor, 36% may look for a new PC vendor next year, compared with 24% of the sites that name Compaq as their PC vendor of choice

Source: CW Database Division

CW Chart: Michael Siggins

AIX users get CICS

IBM brings transaction processing to RS/6000

BY MARYFRAN JOHNSON
CW STAFF

NEW YORK — IBM pasted a "Ready for Commercial Prime Time" label on its RISC System/6000s last week by moving the mainframe world's premier transaction-processing software to the Unix-based workstation and server line.

With the introduction of the AIX version of CICS, IBM broadcast the message that it will not sit idly by while competitors hitch a ride on the downsizing trend at IBM's expense. Reinforcing that point was the unveiling of several other transaction-processing software products for AIX, a pair of powerful new RS/6000 models and additional AIX software (see story page 12).

"If there was any doubt in your mind, the fact that we have CICS on AIX does show we're deadly serious about Unix," said Jeff Mason, IBM's director of advanced workstations and AIX systems. "This is a great opportunity for our mainframe CICS customers to take their next CICS application and try it on a 6000."

The AIX CICS/6000 product is scheduled to ship in June 1993 at prices ranging from $3,700 to $29,600. It is built on the Open Software Foundation's Distributed Computing Environment and Transarc Corp.'s Encina on-line transaction-processing technology.

At a glance

- The **Customer Information Control System** is a software subsystem that allows businesses to run on-line transaction processing applications, such as those used by banks to access information in large databases.
- IBM counts 36,000 licenses sold for CICS, which is installed in 490 of IBM's 500 largest accounts.
- 300,000 programmers have been trained in CICS application programming.
- More than 1 billion lines of CICS code are on the market today.
- Key feature of AIX CICS/6000: support for the CICS family application programming interface.

The entire suite of new AIX products — several to be available in December — is based on emerging and de facto industry standard technologies from

Continued on page 12

Palmer to shuffle DEC market plans

Changes expected to reshape business units

BY MELINDA-CAROL BALLOU
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. Chief Executive Officer-elect Robert Palmer is expected on Thursday to detail sweeping structural changes intended to snap the listless minicomputer maker back into shape.

Late last week, DEC's upper management was said to be considering a number of proposals, including stealing a page from IBM by establishing customer-driven global business units in areas such as direct merchandising and multivendor services.

Winning 'em back

But as Palmer settles into his new job this week, one of the first things he may need to do is woo back users disgruntled by the consequences of the ongoing layoffs of DEC service representatives — cuts that have been accelerating during the past month.

"They have not only been cutting people, but [they] seem to users to be taking the best away, leaving behind those who are not as technically qualified or who do not follow up on things," said Bill Mayhew, chairman of the Digital Equipment Computer Users Society Business Practices Special Interest Group Ser-

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Perot loses prospect to former exec

Railroad taps Feld to lead client/server charge

BY MARK HALPER
CW STAFF

FORT WORTH, Texas — After rejecting an outsourcing pitch from Perot Systems Corp., transportation giant Burlington Northern, Inc. has tapped recent Perot resignee Charles Feld to guide it through an estimated multimillion-dollar information systems overhaul.

Feld, who left Perot earlier this month to restart his own consulting business [CW, Sept. 21], said last week that his departure was not related to his Burlington Northern win — a contract that effectively establishes him as interim chief information officer at the $4.5 billion company.

"I assumed when I left Perot that I could work honorably anywhere in the country, except at Burlington Northern," Feld said, claiming Perot executives encouraged him to accept the Burlington job after their contract bid failed.

Burlington Northern's Robert Brydges, assistant vice president of computer operations, said Feld essentially replaces former CIO Robert Hanson, who left earlier this year. "It's a unique arrangement — he's a contract CIO, so to speak," Brydges observed.

"We're trying to build their business based on getting in and getting out as quickly as possi-

Continued on page 16

ISSC turns to renowned CIO

BY NELL MARGOLIS
CW STAFF

TARRYTOWN, N.Y. — A year after one of the largest mergers in U.S. banking made his high-flying job history, former Security Pacific Corp. information systems chief John P. Singleton last week touched down in the executive suite of IBM outsourcing subsidiary Integrated Systems Solutions Corp.

Earlier this month, according to ISSC Marketing Vice President Lane Jorgensen, Singleton quietly moved into place as general manager of business development. The newly minted post places him among the firm's top honchos reporting directly to President Dennie M. Welsh.

In his new role, Singleton will be called on to leverage marketing acuity and an eye for the relationship between business and

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Unix devotees intrigued by native NetWare. Page 4.

Users like AS/400 hardware but question IBM estimates. Page 4.

Compaq sets segmented server strategy. Page 8.

Sun, CA align on Unix systems management. Page 12.

In Depth — Why are large system developers shunning the PC? Page 85.

NEWSPAPER

EXECUTIVE BRIEFING

September 28, 1992

A COMPREHENSIVE GUIDE TO THIS WEEK'S NEWS

PC HARDWARE

WHO'S CHOOSING WHOM? With users no longer blindly loyal, PC heavyweights must toss other lures to would-be buyers besides a good name. *Page 1*

COMPAQ'S DUAL SERVER is aimed at both the high end and the mainstream volume market. *Page 8*

IBM NAILS DOWN PART 2 of its three-pronged PC strategy with a revamped PS/2 line. *Page 8*

THE USUAL SUSPECTS HAVE COME OUT behind Intel's new 33-MHz I486SX chip. *Page 8*

THE PEN-BASED MARKET, slow to develop, tries to recast itself with more of a mobile slant. *Page 15*

HEALTH CARE SUPPLIES MAKER tells how leasing brought order to threatened PC chaos. *Page 42*

MICROSOFT'S WINDOWS SOUND SYSTEM has the stuff to make corporate users take their first steps toward multimedia. *Page 37*

MANAGEMENT

THE ROAD TO IS LEADERSHIP isn't necessarily through IS at Hughes Aircraft, which appoints non-IS professionals to IS leadership posts, reasoning that they know better what users need. *Page 87*

IS OUTSOURCING FADING AWAY? No way, say consultants: It's getting bigger, broader and more attractive to financially stable firms that are looking to leap into advanced technologies without losing focus on core businesses. *Page 88*

INDUSTRY

DEC CONSIDERS HOW BEST TO STRUCTURE itself in its bid to push forward, as users respond to service layoffs. *Page 1*

U.S. REP. MAJOR OWENS (D-N.Y.) says that Section 1706 discriminates against minority contractors and should be repealed. *Page 33*

ORACLE POSTS $307 MILLION in first-quarter revenue, an increase of 25% over the previous year. But revenue was offset by a onetime accounting charge, resulting in a $33.5 million loss. *Page 109*

PAUL GILLIN APPLAUDS the new, more user-oriented FCC. *Page 32*

ANTIVIRUS SOFTWARE MAKER MCAFEE ASSOCIATES plans an initial public offering next month. *Page 109*

OUTSOURCING

OUTSOURCING IS BECOMING MORE ATTRACTIVE to financially stable firms that want to get into advanced technologies without losing focus on core business, experts say. *Page 88*

BURLINGTON NORTHERN SCOTCHES the idea of outsourcing with Perot Systems but taps a former Perot executive to help with an IS overhaul. *Page 1*

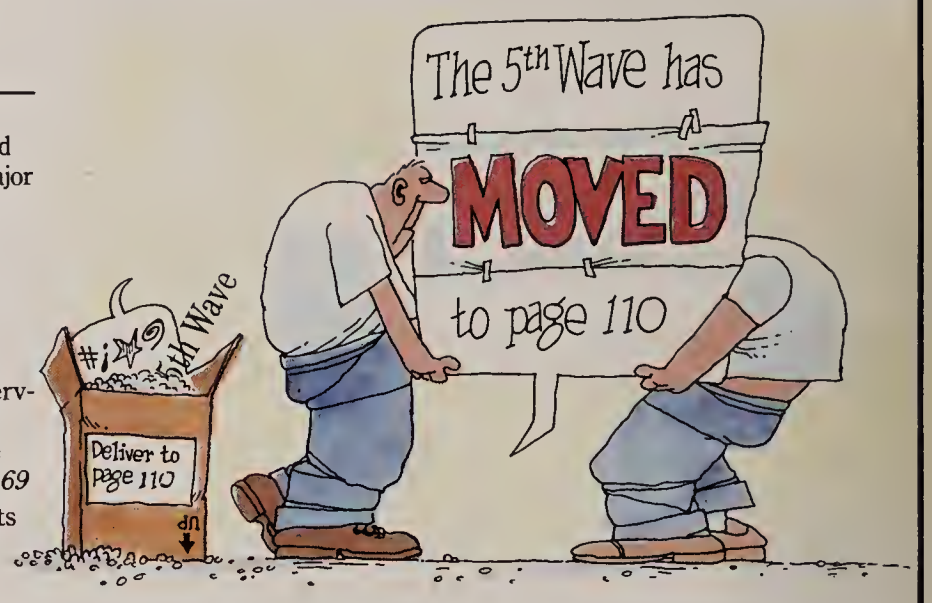
EDS WINS A MULTIMILLION-DOLLAR CONTRACT renewal to process Medicaid claims for the state of California, but the state's fiscal crisis makes much of the job conditional. *Page 16*

DATABASE MANAGEMENT

▶Inaccurate, outdated, corrupted and missing data is becoming a major problem as businesses become more information-dependent and key functions are downsized to more vulnerable platforms. *Page 81*

▶Pyramid and Sequent say they will support Oracle 7's parallel server option, an offering that allows multiple copies of Oracle to share the same set of disk drives. *Page 69*

▶Cognos upgrades Impromptu, its SQL query tool for Windows. *Page 77*



APPLICATION DEVELOPMENT

▶The need to drag old host-based systems into a client/server world puts the state of North Carolina out front in terms of state government use of CASE. *Page 6*

▶Business applications coders can't take PCs seriously as development platforms because the machines lack the tools, methodologies and support facilities these developers need. *Page 85*

▶The recent Software Development Fall '92 show indicates developers are focusing more on management issues and less on technology glitz. *Page 75*

▶Software AG is well under way with its move to client/server computing, but users say its work is far from done. *Page 70*

▶Powersoft has teamed up with several big-name CASE makers in alliances to lure users who want to build client/server applications. *Page 75*

UNIX

▶IBM brings its market-leading transaction processing software to the Unix-based RS/6000 platform, broadening downsizing options for its own customer base and giving competitors another hurdle to jump when luring IBM users to other Unix platforms. *Page 1*

▶As expected, Computer Associates will port its CA-Unicenter systems management software onto Sun Microsystems' Unix-based Solaris environment. *Page 12*

▶Univel's UnixWare, due out at Networld in mid-October, raised a faint cheer from users at a chapter meeting of Novell Users International. Users say they like the UnixWare concept of integrating Unix-based application servers with Novell NetWare servers; however, they say they want freedom to choose their own Unix — not necessarily Univel's client/server platform, Unix System V, Release 4.2. *Page 4*

INTERNETWORKING

▶Users are starting to pay attention to how routers are put together, as issues such as fault tolerance, performance and scalability grow. *Page 59*

▶Combat heats up in the ripe low-end internetworking market as Hewlett-Packard and other vendors continue to hone inexpensive products for far-flung corporate sites. *Page 14*

▶Network General introduces a new version of Sniffer that helps users analyze and fine-tune LAN-to-LAN router connections. *Page 60*

▶DEC and Systems Center are joining up to offer networking tools that better integrate SNA and DECnet networks. *Page 61*

LANS

▶The rapid growth of wireless data networking is raising questions about security and reliability. *Page 59*

▶At their association's conference, Banyan users applauded the company's new receptiveness, open platform strategy and management team. *Page 14*

▶Banyan users are generally happy with the company's direction but last week peppered executives with a list of technology requests and a nagging pricing complaint. *Page 14*

▶Consultant Robert Stearns talks about the Pinocchio Syndrome, or fibs that vendors tell. *Page 33*

STORAGE

▶Micro Technology countersues DEC, seeking to validate its position in a dispute over whether the latter has the right to license storage technology. *Page 109*

▶A quick study of a few key angles can help you make a wise decision about which storage media — RAID or DASD — is right for your business. *Page 71*

▶Tiny 2½-in. disk drives have passed 200M bytes in capacity and are rapidly going higher. *Page 28*

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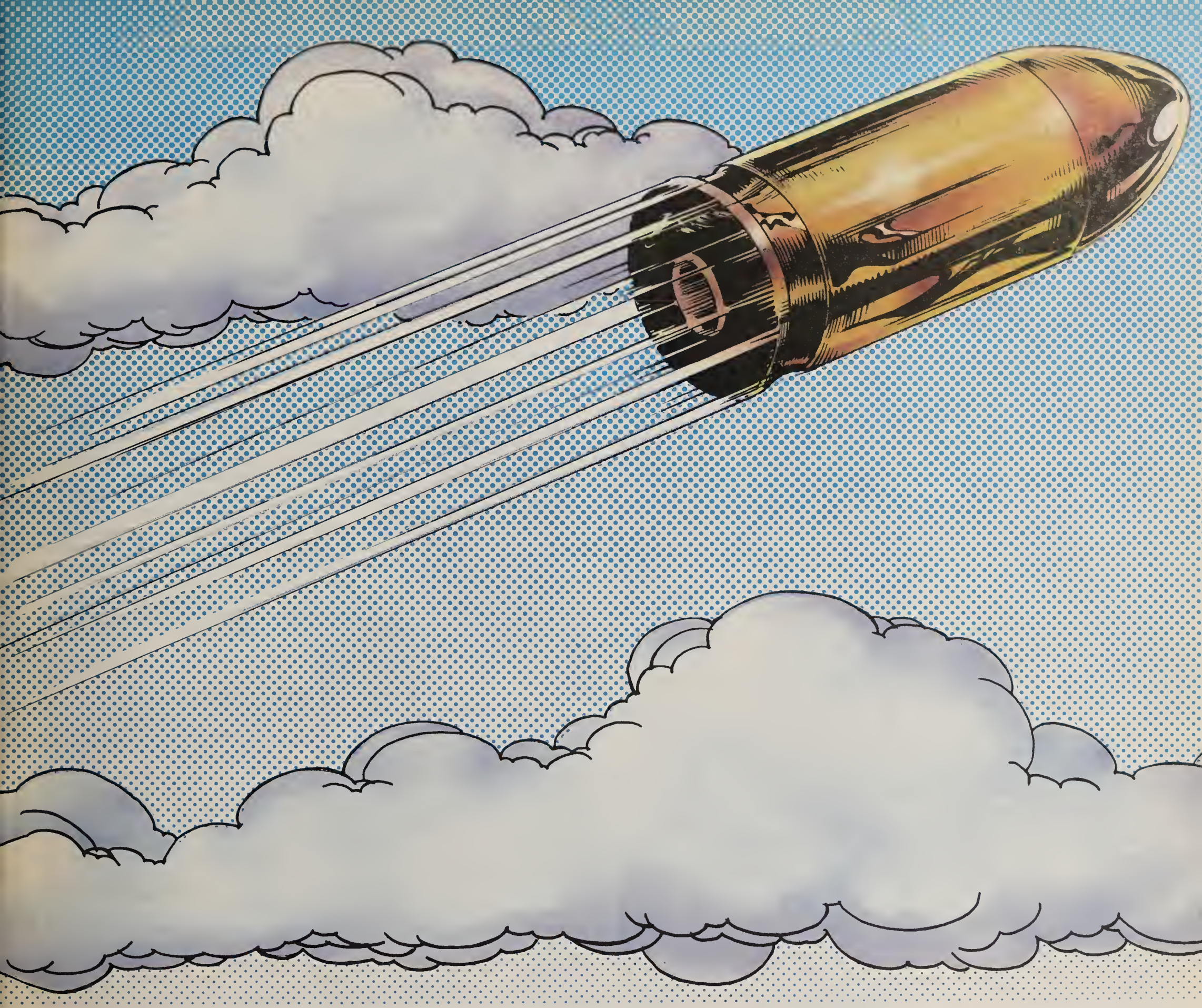

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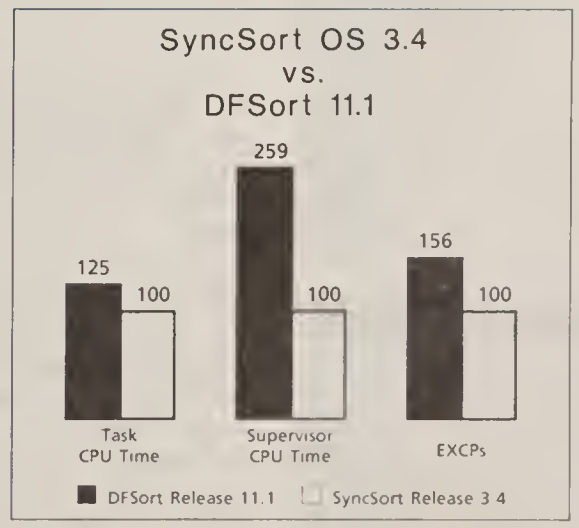

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Upgrades, service top AS/400 users' concerns

BY KIM S. NASH
CW STAFF

In 1989, IBM representatives advised LensCrafters to start its Application System/400 setup with three B models. But the Cincinnati-based eyeglass maker immediately found the machines to be slow and otherwise inadequate and has since had to upgrade every year.

"That's sooner than we thought, for sure," said Eric Bergeron, programmer/analyst. "We've continually been right on the border of having to use the biggest AS/400s as they evolved," he explained.

Such undersizing problems are common, according to a recent survey of 300 AS/400 users conducted by Aberdeen Group, a research firm in Boston. In fact, the most common cause for users to upgrade systems early on is inaccurate sizing estimates made by suppliers, the survey said.

Forty percent of the 240 people who received estimates from IBM said they were wrong — too small — 94% of the time.

Some users said they think they have the situation figured out. IBM's tiered pricing scheme means each hardware upgrade puts more money in its pockets. IBM responded that users are "consistently honing their competitiveness . . . with advanced applications" that may require upgrades.

The Aberdeen survey unearthed many users who do not fully trust IBM for an upgrade, according to John Logan, executive vice president. They wait as long as possible, wringing as much as they can from current systems, then buy only incrementally bigger models, he explained.

Almost half of the respondents said they plan to upgrade within 12 months. This compares with 43% who said they upgraded during the past 48 months. This expected jump in business is in part because of capacity in installed systems "hitting a breaking point," Logan said.

"These people have been left with a very bad taste in their mouth," he said, referring to fears that IBM will underestimate the size processor that users need, forcing them to upgrade to a bigger, more expensive system in only a few months.

Still selling

Overall, the survey was positive. The brisk-selling AS/400 earned top grades in several areas, including hardware-related performance pieces such as CPU, printers and hardware support (see chart).

Westinghouse Security Electronics, based in Santa Clara, Calif., has been "quite pleased" with its Model E35 performance, said Peggy Payne, information systems manager. Payne said she liked the line's scalability, which makes for economic pricing. "I've never dealt with a better-run IBM division," she said.

Those users polled also expressed concern and sometimes anger regarding networking and support issues, including the following:

• **Local service.** IBM's restructuring resulted in the loss of some experienced technical people, which left some users in a pinch, according to Aberdeen Group.

"Local branches are doing as well as they can, but they lack the quality people they had a couple years ago," said Rodger Peck, former president of Common, a large IBM user group.

• **Training.** The versatility of the AS/400 operating system can also cause problems for those not well-versed in its functionality, Aberdeen Group found. IBM needs to focus on providing specialists in key areas to help users through unique situations, according to Logan.

Making the grade

AS/400 users like key features such as the CPU and OS/400 but gave lower grades to CASE, network management and training

Hardware	
CPU	A
Disk drives	B
Tape drives	C
Printers	B

Software	
OS/400 operating system	A–
OS/400 relational database	B+
Network management	C
CASE	C

Support	
Hardware support	A
Software support	B
Programmer training	C+
Systems management training	C+

Based on a survey of 300 AS/400 users

Source: Aberdeen Group

Unix for NetWare set for launch

Targets business users who view Unix as top platform for business apps

BY ELISABETH HORWITT
CW STAFF

NEW YORK — Univel plans to announce its UnixWare family of client/server products at the Networld '92 show in Dallas the week of Oct. 13, Univel President Joseph Applebaum told a group of interested but cautious Novell, Inc. users last week.

A joint venture formed by Novell and Unix System Laboratories, Inc. (USL) late last year [CW, Dec. 16, 1991], Univel is eyeing the burgeoning trend in downsizing host applications to department local-area network servers, said John Kiger, Univel's manager of product architecture.

At last week's meeting of the Northeast chapter of NetWare Users International, LAN administrators got a preview of Univel's upcoming UnixWare Enterprise Computing family, founded on the UnixWare Application Server and UnixWare Personal Edition products. The client/server system, based on USL's Unix 4.2, features built-in access to Novell's NetWare servers via Novell networking protocols.

The idea is for users to continue using NetWare servers for file- and printer-sharing and IBM host access while making use of Unix 4.2's multiuser power, fault tolerance and business-friendly features, Kiger said.

Against all odds

UnixWare allows Novell to hedge its bets against the potential loss of business users who see Unix, rather than NetWare, as the optimal platform for running critical business applications, said Marc Trachtenberg, director of technology at New York-based Novell value-added reseller NetLAN, Inc. The question is whether UnixWare can make a dent outside the NetWare installed base — particularly among users who are already seriously committed to running their business applications on Unix, he added.

LAN administrators at last week's conference expressed a cautious interest in Univel's presentation. One manager questioned whether his company could cost-justify bringing Unix into a NetWare environment, particularly from a training and support standpoint.

USL has been grooming Unix 4.2 to appeal to LAN business users, with introductions during the past year offering business-oriented features such as a Motif-based graphical user interface to shield users from the complexities of Unix commands and Veritas, USL's fault-tolerant, remotely managed file system.

UnixWare further sweetens the pot with support for existing MS-DOS, DR DOS and Microsoft Corp. Windows applications; support for popular SQL-based database management systems such as Oracle Corp.'s Oracle; and transparent integration of NetWare and Unix files.

And by equipping Unix 4.2 with native support of Novell's IPX/SPX and NetWare Core Protocol (NCP), USL hopes to gain a firm niche in Novell's huge installed base of business LAN users, Trachtenberg said.

Doubts claims

Nevertheless, Jose Menendez, a senior systems analyst at Montefiore Medical Center in New York, spoke for several LAN managers when he said, "What brand of Unix and box we choose depends on what the [application vendor] recommends." Based on experience, Menendez expressed skepticism about Univel's claims that UnixWare will run "thousands" of existing Unix and DOS applications. "We don't want to have to tweak [an application] for it to run," he said.

USL competitor The Santa Cruz Operation (SCO) plans to have built-in IPX for the next release of its Open Desktop product due out in a few months, an SCO spokeswoman said. Built-in support of NCP will also be announced in the near term, possibly at Networld, she added.

Univel's UnixWare will compete directly against Microsoft's Windows New Technology (NT) for users who want their servers to support Windows 3.1 applications, NetWare "and Unix for on-line transaction processing, database management and SQL" queries, Trachtenberg said. "Our clients are taking a wait-and-see attitude with both" NT and UnixWare, he added.

For example, New York Hospital is one of many organizations with mixed NetWare and Unix systems that are going to Transmission Control Protocol/Internet Protocol rather than IPX as their common LAN protocol, said Paul Epstein, a data network manager at the hospital.

It is also questionable whether Novell will sit still while its servers are relegated to file- and print-server status. With popular database vendors such as Oracle, Gupta Technologies, Inc. and Informix Corp. supplying NetWare Loadable Modules and the upcoming System Fault Tolerance III (SFT 3) Version 3 designed to support disk-mirroring, "we can provide support of mission-critical applications, too," Novell spokesman Ed Martinson said. "So maybe Unix will have the same functionality but at a higher cost." He said SFT 3 is due out early next year.

Concurrent with the UnixWare announcement, a group of third parties will announce supporting products, including software, to enable UnixWare clients to transparently access services such as NetWare for SAA, Novell's gateway to IBM's Systems Application Architecture systems, Applebaum said.

The price of UnixWare will be "competitive with Unix but not lower than Windows," Applebaum said.

UnixWare revealed

At the foundation of Univel's Unix/NetWare environment are the following:

UnixWare Personal Edition:

Operating environment: *Single-user, multitasking Unix 4.2 with DR DOS, MS-DOS and Windows sessions supported.*

NetWare links: *Built-in IPX/SPX and NetWare Control Protocol.*

Unix links: *TCP/IP and Network File System (NFS) optional.*

User interface: *Mouse-driven, windows-based with Open Look or the Open Software Foundation's Motif's look and feel, plus drag-and-drop features.*

UnixWare Application Server:

Operating environment: Multiuser Unix 4.2; 386, 33 MHz with 120M-byte hard disk minimum.

User interface: X Window System or character-based.

NetWare links: Same as Personal Edition, plus IPX router, terminal services for DOS (NetWare Virtual Terminal).

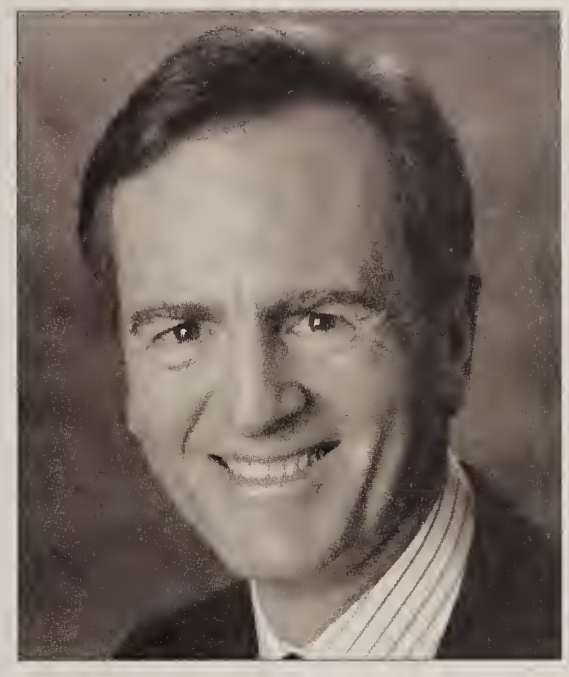
Unix Links: NFS, TCP/IP built in.

Options include: NetWare-compatible file- and print-sharing among servers; encryption; and USL's Veritas fault-tolerant file and file administration system.

LOOK WHO'S COOPERATING ON A COOPERATIVE-SERVER DATABASE

"Oracle's always been the leader in building database technology. One of the great things about Oracle's approach is that they're hiding the differences between all the machines out on the network running on various platforms."

Bill Gates
Chairman and CEO
Microsoft Corporation

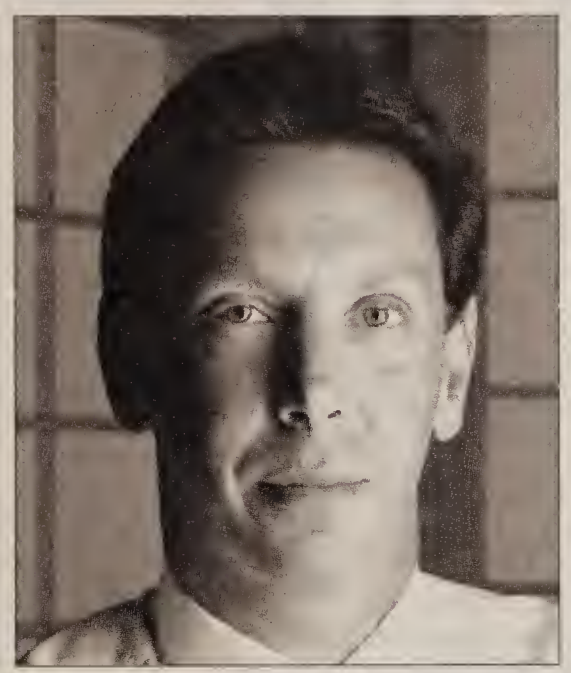


"ORACLE7's breakthrough in hiding technological complexity is analogous to the ease-of-use breakthroughs accomplished by the introduction of the Mac in 1984."

John Sculley
Chairman and CEO
Apple Computer, Inc.

"The fundamental problem with early client-server database management systems is that applications cannot access data on more than one server without a lot of extra programming. This programmatic approach to accessing data on multiple servers is in stark contrast to the totally automatic approach provided by ORACLE7."

Larry Ellison
President and CEO
Oracle Corporation



"With HP systems and ORACLE7, our customers will have the desktop to high-end performance they need for a fraction of the cost of mainframe computing solutions."

John Young
President and CEO
Hewlett-Packard Company

"ORACLE7 is really solving the complexities of the distributed computing environment cost-effectively. Plus, it supplies the reliability and security that are required in a distributed computing environment. In fact, because ORACLE7 matches Sun's client-server model so well, we have chosen ORACLE7 as one of our key databases."

Scott G. McNealy
President, CEO and
Chairman
Sun Microsystems, Inc.

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NEWS SHORTS

Wang layoffs total 2,000

Chapter 11-protected Wang Laboratories, Inc. will have laid off 2,000 workers by the end of this month, with most cuts made in the U.S. Some of the planned 5,000 employee reductions have been delayed to comply with local laws and to meet customer commitments, a spokesman said. The company also warned that costs associated with Chapter 11 restructuring will result in a "sizable" loss for fiscal 1992. Separately, Wang announced it will put imaging applications on and resell the latest high-end IBM RISC System/6000 servers.

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Service firm sues Unisys

Datasat, Inc., a San Diego-based third-party maintenance company, has filed an antitrust lawsuit against Unisys Corp. The lawsuit, filed last week in U.S. District Court in San Diego, alleges that Unisys has forced its mainframe computer customers to buy maintenance service contracts and equipment from Unisys as part of its systems software licensing practice. A lawyer representing Datasat said the suit seeks "tens of millions of dollars" in damages.

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Sun backed suit against OSF

The Open Software Foundation (OSF) last week publicized court documents showing Sun Microsystems, Inc. as the financial backer in a 1991 lawsuit that Addamax Corp. in Champaign, Ill., filed against the OSF. Sun confirmed that it is assisting Addamax, a small security software firm, with a $7.5 million line of bank credit to fund its legal expenses. Addamax's antitrust lawsuit, still pending in U.S. District Court in Boston, accuses the OSF, Digital Equipment Corp. and Hewlett-Packard Co. of conspiring to fix software prices.

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HP net management to go low cost

HP is expected next week to introduce HP OpenView Interconnect Lite, a low-cost, Unix-based software application that will enable users to manage multivendor Token Ring and Ethernet networks via Simple Network Management Protocol (SNMP) and the OSF's Distributed Management Environment (DME) graphical user interface, HP said. Available Nov. 1, it will be priced at $10,000, according to the company.

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Lotus kills Windows app suite

Lotus Development Corp. last week said it has ended an unannounced effort to develop a Windows version of its Lotus Works application software suite. The raging personal computer price wars — and market research indicating that Windows users preferred full-blown applications — made Lotus realize it should spend its research and development dollars on more fruitful endeavors, a company spokesman said. Lotus will continue offering a DOS version of Works, he added.

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Short takes

Candle Corp. in Los Angeles said last week it had developed a Posix-compliant software layer for use with IBM's MVS mainframe operating system. The layer will allow Candle to develop cross-platform management products. . . . Shareholders of **AICorp.** in Waltham, Mass., are set to vote Wednesday on the company's proposed merger with Palo Alto, Calif.-based **Aion Corp.** . . . **Unisys'** defense subsidiary, **Paramax Systems Corp.**, has been awarded a $69 million contract from the Federal Aviation Administration to provide software and software re-engineering support for the FAA's Terminal Software Development program. . . . **Unisys** and the **Wollongong Group, Inc.** have signed a deal that grants Unisys a worldwide license to market its own version of Wollongong's SNMP-based management system. . . . **Cabletron Systems, Inc.** in Rochester, N.H., announced that it is working with the **OSF** to develop network management applications that will conform to the OSF's DME. . . . **Information Resources, Inc.** has reportedly ported its Unix-based executive information system software to the Sun platform.

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Coming of (technology) age

North Carolina battles to move off ancient systems to reach cutting edge

BY KIM S. NASH
CW STAFF

RALEIGH, N.C. — The last staff member who knew anything about the Mohawk Data Sciences minicomputer running North Carolina's statewide accounting system quit in June. Now, not only is the decade-old machine on the verge of keeling over, but the one person who could perform triage is no longer around.

The same state that boasts achievement awards for telecommunications and overall information systems structure is nearly archaic in other technology areas. For instance, the Department of Transportation's mainframe-based highway tracking system was written in assembler 20 years ago and is virtually incomprehensible to today's staff.

"Our current [accounting] systems are so old they could die at any minute," said Tom Runkle, deputy state controller for information resources management. "It's hair-raising."

Pinching pennies

Despite the need to quickly update some of these systems, an ever-slimmer budget has forced the state to plan carefully for the future. That so far has included shaving IS staff by laying off six of 60 programmers in the last year. "We can't afford to do a lot of hiring, so we have to make sure everything we do from now on is as lean as can be," Runkle explained.

One key piece of its strategy is a recent $1 million investment in computer-aided software engineering (CASE) tools from Andersen Consulting in Chicago. Foundation for Cooperative Processing (FCP), a workbench for building client/server applications, is being used to pull accounting, transportation and other dangerously old systems into the future.

The state has been doing traditional mainframe-based development since 1989 with Foundation, Andersen's original workbench. That alone puts it several steps ahead of other states when it comes to CASE, said Dale Nelson, president of the National Association of State Information Resource Executives, a group of government IS leaders based in Lexington, Ky.

A set of stringent technology laws passed by North Carolina's general assembly predicated the FCP purchase (see chart). Effective Sept. 1, the laws mandate a minimum level of technologic uniformity across the state. Ultimately, all key systems will talk to one other, regardless of the hardware on which they reside. That is a big reason the state stuck with Andersen.

Another is the client/server direction the state is taking. Outside consultants drew up blueprints in 1991 for a $1.6 million, 90-user system to track construction projects on the state's 77,000 miles of highways. They suggested revamping the IBM 3090 mainframe-based system to run in client/server mode — a concept now coming to life. Analysis and design are complete, and code generation is under way.

Simpler, less expensive projects such as non-mission-critical pilots might have eased the state into client/server CASE, but it does not have the luxury of time.

At first, the prospect of designing for client/server "posed serious problems," said Stephen Arrants, MIS director. The client/server development experience of North Carolina's programming staff totaled "zero," according to Runkle. As Arrants put it: "We definitely had a business problem in search of a technology."

After searching for an integrated tool set that met client/server needs, the state landed back at Andersen's door, buying an FCP starter kit. The kit included products, training and onsite support on a real-life project.

Progress has been steady, with two large, time-sensitive applications due to be deployed soon. So far, $150,000 to $200,000 has been spent on refreshing the old accounting system with graphical front ends. Plus, the client/server highway management system is on track for initial delivery within six months. It will run over 55 local-area networks anchored with IBM OS/2 servers and personal computer clients.

But there was a glitch in the beginning. FCP requires that business logic models be developed in the C language, which none of North Carolina's programmers knew. So they had to contend with dual training in C and the Andersen product. "The boot camp wasn't a practice exercise; we made real things happen fast," Arrants said.

The menu-driven FCP insulates the programmer from the nitty-gritty of coding graphical user interfaces, Arrants said. "Everyone bought in quickly once they saw the fast results."

Thou shalt ...

The General Assembly of North Carolina passed eight laws on Sept. 1 to unify IS across all 22 state agencies. A new executive-level technology committee must do the following:

1. Publish a statewide information technology strategy.
2. Report annually on statewide technology initiatives.
3. Build a special fund for technology projects, aside from the regular budget allocated by the state.
4. Recommend to the governor the relative priorities of the information technology of the executive agencies.
5. Set a quality-assurance policy to be adopted by all state agencies for information technology projects, IS training and software documentation.
6. Establish quality reviews for major state projects.
7. Review and approve information technology plans of all state agencies.
8. Promote procurement policies and procedures consistent with published industry standards for open systems.

CW Chart: Stephanie Faucher

CORRECTIONS

In the *Computerworld Premier 100* packaged with the Sept. 14 issue, it was incorrectly reported that Hughes Aircraft Co. was the first vendor to provide an Ethernet wide-area network satellite option. AT&T Tridom has been offering this capability since June 1991.

. . . . . .

An item in the Sept. 21 issue of *Computerworld* should have said that Systems Center, Inc. acquired market rights to a product called AM:PM from Tangram Systems Corp.

. . . . . .

Notes at the bottom of the chart in the Salary Survey in the Sept. 7 issue of *Computerworld* inaccurately listed Portsmount, Wash., instead of Portland, Ore., in the section on the Pacific Northwest.

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Intel chips snapped up

BY CAROL HILDEBRAND
CW STAFF

SANTA CLARA, Calif. — The usual suspects have come out in force behind Intel Corp.'s new 33-MHz I486SX chip, which was announced last week.

An Intel spokesman said the new chip operates more than twice as fast as a 33-MHz 80386DX processor.

Vendors using the new chip include the following:

• **IBM** unveiled three new Personal System/2s based on the new processor. Models 76 and 77 feature Extended Graphics Array graphics, Small Computer Systems Interface and 8M bytes of random-access memory. The Model 85 is a low-end server with eight 32-bit slots, five storage bays and up to 3.2G bytes of storage. Prices range from $2,735 to $4,165.

• **Dell Computer Corp.** popped the new chip into both its Performance and D series lines of computers, for $200 less than a similarly configured 33-MHz DX model. Thus, an SX machine with 4M bytes of RAM, a 120M-byte hard drive and DOS and Windows costs $1,899.

• **Zenith Data Systems** will be using the chip in three models of its Z-300/400 series and in one model in the Z-Station desktop lines. Starting at $1,639, the 300/400 series is available immediately. The Z-Station will be available in the fourth quarter.

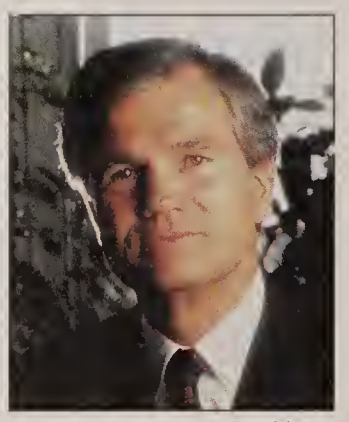
• **AST Research, Inc.** added machines based on the new chip to both its Power Premium and Bravo desktop lines. Pricing ranged from $1,595 to $3,895.

Senior writer Michael Fitzgerald contributed to this report.

Brand loyalty no longer name of PC game

CONTINUED FROM PAGE 1

Figures show that while Compaq is gaining in its efforts to win back mind share, IBM is still behind the curve. A quarterly survey by the CW Database Division showed that the number of IBM PC customers planning to leave the vendor increased 6.5% from the spring quarter to the summer period. Conversely, the number planning to leave Compaq dropped by 16% (see chart page 1).



Compaq's Pfeiffer: *'We did not respond to needs in time'*

In a move aimed at bringing back its eroding customer base, IBM has embarked on fundamental changes, breaking out its PC hardware division into a semi-autonomous company, with smaller groups or brand teams responsible for the success of a particular product line.

Speaking at the Personal System/1 announcement this month, Robert Corrigan, head of IBM Personal Computer Co., said giving his brand teams the freedom to effectively market their products was vital to bringing IBM back to the forefront. "The real issue is not whether I am untethered [to make decisions] but whether the brand teams are untethered," he said.

IBM's product rollout is not yet complete, with the ValuePoint line — aimed at cost-conscious corporate customers — a month away from announcement and a portable announcement slated for Oct. 6.

Eckhard Pfeiffer, president and chief executive officer of Compaq, said he sees three different flavors of old-time Compaq customers: those that never considered leaving, those that were being forced to leave because of price considerations and those that deserted to clone vendors early on.

When analyzing the fickleness phenomenon, Pfeiffer said, "The key message we got was that we did not respond to needs in time."

With Compaq now focused on three different market segments, with products that are realistically priced, Pfeiffer said it is winning users back. He said the company has scored strongly in that second category, "where customers are willing to pay $150 more for service and reliability." At the lower end, "we're still fighting on a day-to-day basis," he said.

But users are not so easily wooed. Julio Duran, manager of distributed systems at Florida Power & Light in Miami, said the company has moved away from blind vendor loyalty.

"Whoever is going to add the greatest value to FPL is going to be our vendors," he said. With his two biggest criteria being reliability and the flexibility to upgrade, Duran said he would stick with the Top 2 tiers of vendors, "but we've changed from the past, when FPL was very tightly coupled with brand-name vendors like IBM and Compaq."

While it will not be easy for IBM and Compaq to get rebellious users back on track, analysts said the trend is indeed toward first-tier vendors. "There is definitely a trend toward what we call a 'flight to quality,' " said Peter Kastner, an analyst at Aberdeen Group in Boston.

Analysts cited a number of methods designed to keep corporate buyers returning to the same vendor. Among the most popular is an increase in service and support. For example, IBM's PS/2 announcement last week (see story below) was highlighted by the unveiling of an unprecedented three-year warranty on its machines.

Some companies, with mission-critical applications tied to their local-area networks, need to know that the vendor will be there in the long run. For Conyer, Ga.-based Lithonia Lighting, IBM's willingness to do backflips is what keeps Chief Information Officer Charles Darnell coming back. "They're here when I need them," he said.

Senior writer Michael Fitzgerald contributed to this report.

High and low roads taken

Compaq's server announcement next week will detail its plans to diversify its server strategy in much the same way as it did its PC lines, according to Gary Stimac, head of Compaq's Systems Division.

Last week, Stimac outlined plans to introduce two new lines of servers on Oct. 5: a low-end, or "mainstream," family designed to be Novell, Inc. NetWare-ready and a high-end line that will come in above the company's SystemPro line and will eventually replace it. "We traditionally have had the most powerful servers," Stimac said. "Now, we're also going to go after the low-end volume market."

The mainstream line will have models based on both Intel Corp.'s 33-MHz I486DX chip and the 33/66 486DX2 processor, sources close to the company said. The servers will be very competively priced, starting at about $3,500.

Although NetWare will not be preloaded on the machines, Stimac said, the software will be included in the package.

The four models of the high-end line will be based on both the DX2 chip and the Intel 50-MHz 486DX processor, sources said, and will start at slightly below $15,000. The servers will be equipped with a variety of remote diagnostics. The line will also include the TriFlex architecture, which has a separate 64-bit processor bus and a 128-bit memory bus that operate in conjunction with the 32-bit XT/AT bus and Compaq's DataFlow Manager.

Analysts and users hailed the low-end direction for Compaq.

Bill Lodge, project leader at Turner Corp. in N.Y., said a mainstream server is something he needs. "I would particularly like low-cost servers that we can use as file servers," he said.

CAROL HILDEBRAND

IBM turns to service to buttress premium line

BY CAROL HILDEBRAND
and MICHAEL FITZGERALD
CW STAFF

NEW YORK — The second plank of IBM's Personal Computer strategy was nailed into place last week when the company announced a revamped Personal System/2 line distinguished by added service and support and technology additions under the hood.

Users voiced approbation for the extended service, which includes an unprecedented three-year warranty on the new models up through the Model 295 servers but said they thought the pricing could be more competitive. Prices on the new models range from $2,265 for a Model 56 with a 50-MHz 486SLC2 clock-doubling chip to $14,015 for the Intel Corp. 50-MHz I486DX-based Model 95 server with a 1G-byte hard drive.

"We think these PS/2s are going to make a big difference. We were looking to switch to Compaq, but we think now we'll stay with IBM," said Joseph Kalina, an assistant vice president at The First National Bank of Chicago's Community Banking/Systems Department.

Sam Inman, head of marketing at IBM Personal Computer Co., claimed that IBM's service outdoes both Dell Computer Corp.'s and Compaq Computer Corp.'s. He said IBM offers a three-year warranty, compared with the others' one year.

"The three-year warranty can be worth up to $2,800 for a customer, compared to the difference for not having to get a maintenance agreement after the first year," Inman said.

Richard Zwetchkenbaum, an analyst at International Data Corp., called the service "very aggressive."

Kalina said IBM's offer of a three-year warranty and an embedded processor, which will help the bank track its PCs, offsets what he called mediocre pricing. "Inventory control is key for us; we don't know where half this stuff is. We'd like to put that chip on the systems we have today," he said.

Others were not so sanguine. While saying that "you have to look at it," Loren R. Wahl, an information specialist at James River Corp.'s Neenah, Wis., Technical Center, said IBM does not really factor into his firm's buying decisions now.

Faced with this kind of skepticism, IBM is in the midst of defining a new PC strategy that will see it produce three lines of machines.

The final member of the trio will catch the limelight at the end of next month. The company will then unveil its ValuePoint line aimed at price-conscious corporate customers.

Different strokes

IBM is loading features onto its new boxes while lopping price tags on older models. Two examples:

	NEW	OLD
	PS/2 56 SLC2-0B6	PS/2 565LC LS-25X
Processor	25/50-MHz 486SLC2	25/50-MHz 386SLC
RAM	8M bytes	4M bytes
Hard drive	104M bytes	Diskless
Price	$2,265	Was $2,705; now $1,665
Software	OS/2 preloaded	
Misc.	XGA-2 SCSI	

CW Chart: Stephanie Faucher

TWO-PHASE COMMIT SYBASE VS. ORACLE7

PROGRAMMATIC AND PROPRIETARY

```
two-phase()
{
/* open up two servers and a commit service */
  dbproc_server1 = dbopen(login, databasename1);
  dbproc_server2 = dbopen(login, databasename2);
  dbproc_commit = open_commit(login, NULL);
/*
** prepare data for each command buffer and select a database to
** use, then start distributed transaction on commit service
*/
  commid = start_xact(dbproc_commit, application, "my_xact", 2);
/*
** build transaction name and begin transactions on different
** servers
*/
  build_xact_string("","",commid, xact_string);
  dbfcmd(dbproc_server1, "BEGIN TRANSACTION %s", xact_string);
  dbsqlexec(dbproc_server1);
  dbfcmd(dbproc_server2, "BEGIN TRANSACTION %s", xact_string);
  dbsqlexec(dbproc_server2);
/* perform various updates and then.... */
/* if there is a failure on one abort all of them */
  if (return_code 1 == FAIL)
  {
      abort_xact(dbproc_commit, commid);
      dbcmd(dbproc_server1, "ROLLBACK TRANSACTION");
      return_code = dbsqlexec(dbproc_server1);
      dbcmd(dbproc_server2, "ROLLBACK TRANSACTION");
      return_code = dbsqlexec(dbproc_server2);
      if (return_code != FAIL)
      {
          remove_xact(dbproc_commit, commid, 1);
      }
  dbexit();
  exit(ERREXIT);
  }
/* otherwise prepare to commit */
  dbcmd(dbproc_server1, "PREPARE TRANSACTION");
  dbsqlexec(dbproc_server1);
  dbcmd(dbproc_server2, "PREPARE TRANSACTION");
  dbsqlexec(dbproc_server2);
/* as before if anyone fails then abort all, otherwise commit */
  if (commit_xact(dbproc_commit, commid) == FAIL)
  {
      abort_xact(dbproc_commit, commid);
      error_function(); /* rollback and remove each participant */
  }
  dbcmd(dbproc_server1, "COMMIT TRANSACTION");
  dbcmd(dbproc_server2, "COMMIT TRANSACTION");
  my_sqlexec(dbproc_server1);
  my_sqlexec(dbproc_server2);
  close_commit(dbproc_commit);
  dbexit();
}
/* define the subroutine which handles failure */
my_sqlexec(dbproc, dbproc_commit, commid)
DBPROCESS *dbproc;
DBPROCESS *dbproc_commit;
commid;
}
  return_code = dbsqlexec(dbproc);
  if (return_code != FAIL)
  {
      remove_xact(dbproc_commit, commid, 1);
  }
  return;
}
```

Source: D.O. McGoveran and C.J. Date: *"A Guide to SYBASE and SQL Server."* Addison-Wesley, 1992. Pg. 496, Fig. 27.1.

AUTOMATIC AND STANDARD

```
UPDATE   SAVINGS
SET      S_BALANCE = S_BALANCE - 250.00
WHERE    S_DEPOSITOR = 'JONES'
UPDATE   CHECKING
SET      C_BALANCE = C_BALANCE + 250.00
WHERE    C_DEPOSITOR = 'JONES'

COMMIT   WORK;
```

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Shuffling DEC plans

CONTINUED FROM PAGE 1

vice Group. "DEC is entitled to fire whomever they want, but I don't think they have an effective method for factoring in customer satisfaction."

Getting closer to customers is key to Palmer's proposed initiatives, according to an internal company memo obtained by *Computerworld*.

In addition to creating a direct merchandising and multivendor services business unit, Palmer is considering building a components business unit and making an even stronger commitment to systems integration, according to the memo.

Product development, previously driven by technology considerations during the reign of founder Kenneth H. Olsen, will focus on the requirements of the business units, which will manage their own advertising, pricing and marketing strategies, the memo said.

If implemented, the initiatives would allow DEC to more closely align engineering development with customer requirements because presumably the business units will be more in tune with users' needs.

Gone, ostensibly, will be the maze of overlapping marketing and development groups that evolved out of Olsen's matrix management organization. In its place will be one network communications organization, one hardware engineering group and a separate software group, according to inside sources familiar with the restructuring.

In a way similar to that of the business units, individual countries will execute their own business plans and manage sales and services organizations. But a worldwide sales representative will be responsible for developing and managing the overall DEC sales organization.

DEC's Palmer *plans to get close to customers*

"Instead of being like one huge slab of chocolate, it looks as if DEC will have little notches which can be broken off into bite-size items," said Terry Shannon, president of Gander Resources, a market research firm based in Ashland, Mass. "The bottom line here is accountability; there will be more of that than there ever has been before with the old matrix system of management and finger-pointing."

A DEC spokesman said the points contained in the "confidential" memo are part of "work in progress . . . and ought not to be taken out of context" of the final plan.

Chris Christiansen, an analyst at International Data Group, a market research firm based in Framingham, Mass., said these proposed changes are "the proper model for doing a profitable business . . . [although] it would be disruptive to operations at a key time for DEC overall. But they must do it now, since any longer delay would have an even greater adverse effect on DEC's business."

Revolving door

The reorganization of the company has already included significant layoffs, which have been occurring behind the scenes during the past few months. Sources estimated that several thousand employees have departed during this quarter alone; exact figures will be made available in the next two weeks.

An informal survey of about 30 DECUS members across the U.S. and over a range of sites (from one-man shops to Fortune 1,000 companies) conducted by Mayhew found that cuts of between 8% and 10% of DEC field service representatives have been occurring nationwide.

One DEC user who is still committed to the company but who has experienced adverse consequences as a result of the layoffs is Robert Ayr, data center manager at PacifiCare Health Systems, a health maintenance organization based in Cypress, Calif.

"Before they had the layoffs, they would do value-added services. Now I get nailed for additional charges for any little thing they do, and they don't seem as attentive as they were," Ayr said. Ayr's local service office lost about six engineers.

"They still have some guys who are very good, but they're using them for other things," Ayr said.

DECUS Local User Group Chairman Jeff Killeen added that DEC's emphasis on third parties and distributors to fill in the gap for DEC service people has not always been successful for smaller accounts because "they do not seem to be putting the technical people in place to do the backup to sales and support as they should."

Some users are satisfied with the third-party arrangement, however. "It's virtually seamless from our perspective," said Bob Johnson, director of information services at Quorum Health Group, Inc. in Nashville.

Another internal change at the company will be the establishment of commission-based sales beginning Jan. 1 [CW, Sept. 14]. This will result in a 10% cut in base salary for salesmen, sources said.

"I'm certain we're all glad this fiscal year's behind us."

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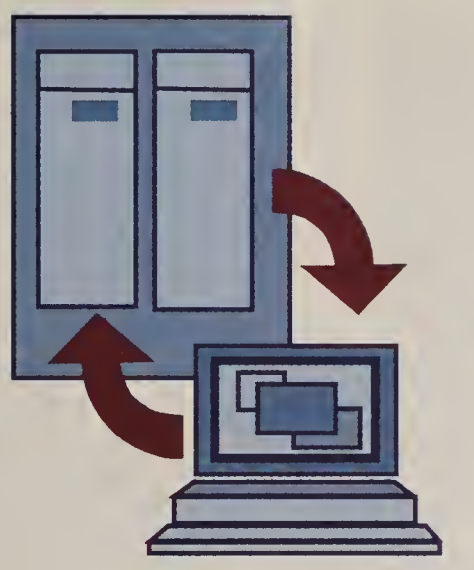
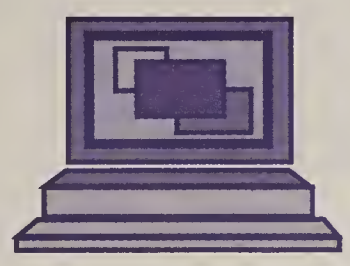
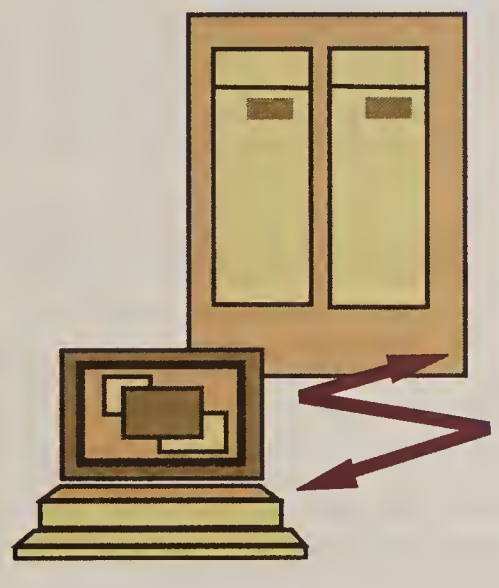


Offloading Mainframe Development and Maintenance



PC Programming



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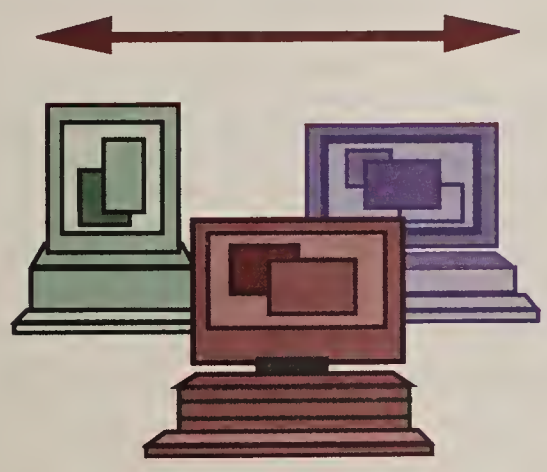

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CA to port CA-Unicenter tools to Solaris

BY THOMAS HOFFMAN
CW STAFF

NEW YORK — As expected, Computer Associates International, Inc. last week announced its plans to port its CA-Unicenter systems management suite to Sun Microsystems Computer Corp.'s servers and workstations running Sun Microsystems, Inc.'s Solaris 2.0 operating system. The product is supposed to ship in 12 months.

Under the agreement, both CA and Sun will market CA-Unicenter for Solaris. CA will eventually port other applications to Solaris, according to Sanjay Kumar, senior vice president of planning. He declined to specify which applications would follow.

Paul Cubbage, an analyst at Dataquest, Inc., a San Jose, Calif.-based market research firm, said he believes the addition of the CA-Unicenter port will benefit Sun's Solaris customers with more robust systems management capabilities. For example, Cubbage said, CA-Unicenter for Solaris will help Solaris users better manage their accounting and security software applications.

The Sun Solaris port will be based largely on work CA has conducted to develop a Unicenter version for Hewlett-Packard Co.'s HP/UX Unix environment, and it will exploit Unix System Laboratories, Inc.'s OpenLook user interface. CA-Unicenter for Unix, which was announced by CA and HP in 1991, is currently in beta testing and is slated to begin shipping in early 1993.

Scott McNealy, president and chief executive officer at Sun, said the agreement will help reassure users who are attempting to downsize mainframe-based applications to Unix that their data will be well taken care of.

More than open systems

Brent Moore, a programmer at Brigham Young University in Provo, Utah, has been testing the HP version of CA-Unicenter for Unix for several weeks. The university is trying to move some of its smaller mainframe applications, such as its budgeting systems, off of its Amdahl Corp. plug-compatible mainframe to its faster and less-expensive HP 9000 Model 827 Unix-based multiprocessing systems.

But Moore said he expects CA-Unicenter for Unix to provide more than open systems management capabilities. The software, he said, can also be used to help Brigham Young replace its expensive microfiche financial archiving storage systems. CA-Unicenter for Unix would replace the microfiche by electronically distributing the school's financial records.

In addition, Moore said he is looking ahead to other planned CA-Unicenter ports, including ports to Novell, Inc.'s NetWare network operating system and IBM's OS/2 2.0 operating environment. Moore plans to integrate these open systems management products among all three environments.

In addition to its agreements with HP and Sun, CA has a deal with Sequent Computer Systems, Inc.

Separately, at the Unix Expo trade show here last week, the Islandia, N.Y., vendor pledged its support to IBM's new CICS for IBM's RISC System/6000 environment, called AIX CICS/6000, which provides IBM AIX users with on-line transaction processing (see story page 1).

Initial CA ports to AIX will include CA-Masterpiece, a suite of financial applications, CA-Collection Management, CA-Recovery Management and CA-Telon. A CA-Unicenter port to AIX is expected to follow, industry observers said.

OSF to establish testing, certification program

Declaring itself in the "second phase" of its development, the **Open Software Foundation** last week said it will establish a testing and certification program to brand genuine versions of its technologies as they appear in products from IBM, Digital Equipment Corp., Hewlett-Packard Co. and other vendors. Testing and certification costs are $10,000 for Motif and $35,000 for OSF/1 operating system implementations.

ROUNDUP

UNIX EXPO

XSoft, a division of Xerox Corp., introduced GlobalView for X, a set of office-productivity and document-management packages for Unix workstation users in the X Window System environment. GlobalView for X, which is scheduled to ship in the fourth quarter, supports both OpenLook and Motif Windows managers. Pricing starts at $1,495, with additional software modules retailing for $495.

Information Builders, Inc. unveiled a new release of its Focus for Unix language that is said to enhance performance, graphics and interoperability for Unix users. Focus for Unix Release 6.5 is compatible with Information Builders' Enterprise Data Access/SQL applications development software. Available on most Unix platforms, Focus for Unix is priced, depending on the number of users, between $3,000 and $123,000 for up to 128 users.

Unix System Laboratories, Inc. (USL) and **IBM** struck a deal to port USL's Tuxedo transaction processing system to IBM's Enterprise System/9000 mainframe line under the AIX/ESA Unix operating system. Tuxedo will be the first on-line transaction processing monitor commercially available for the mainframe AIX/ESA. Beta-test versions of the code are slated to be available at the end of this year, with general availability in early 1993. Pricing was not disclosed.

Tandem Computers, Inc. introduced NonStop-UX Release 2.0, its version of **USL**'s Unix System V, Release 4 for its fault-tolerant computers. Other announcements included the Integrity System Management Suite and the CM-1300 system, a new high-end Integrity fault-tolerant Unix system. An entry-level Integrity CM-1300 system is priced at $179,800. The Integrity System Management suite is priced starting at $5,000. Both systems are available now, according to the vendor.

Unix computer-aided software engineering vendor **Interactive Development Environments, Inc.**, based in San Francisco, demonstrated a modeling tool designed to let users generate SQL queries that work with any relational database. Software through Pictures Information Modeling is a multiuser tool that works with **Sun Microsystems, Inc.**'s OpenLook and OSF/Motif interfaces and Sun's ToolTalk and **HP**'s SoftBench development frameworks. The $7,500 product is due out in December.

AIX users get CICS

CONTINUED FROM PAGE 1

Transarc and the OSF. That presents some risk for users because these technologies are unproven in the market, analysts noted.

IBM seems well aware of that, however, stressing that *none* of the new products are recommended for full production environments. Rather, users are being advised to develop, test and prototype distributed environments first.

One RS/6000 shop doing that is Wausau Insurance Cos. in Wausau, Wis., one of three early support accounts setting up AIX CICS/6000 this month. "The idea of running CICS/6000 on top of DCE is the innovative part here," said Bob Denison, open systems development unit manager at Wausau. "Once it's on top of that architecture, it should be a real smooth port to other platforms. That's the key. We don't necessarily want to go to distributed platforms that are only IBM."

Smart move

Some users saw last week's announcements as both a savvy survival tactic and a welcome expansion of their options.

"They just ate into their own market, but it's something they had to do. If IBM didn't, their competitors would," said Chuck Hemann, manager of engineering computer operations at Harnischfeger Corp., an industrial manufacturer in Milwaukee that runs a large RS/6000 network.

Hemann said that while business operations at his firm still rely on an IBM 3090 mainframe, the increasingly powerful Unix environment on the engineering side is now considered a viable alternative for large applications.

"I see one or two mainframe upgrades in the future, but probably no more," Hemann noted. "We're in the midst of installing a [manufacturing and resource planning] system, and it's probably the last big application on the mainframe."

IBM officials said they believe customers will use AIX CICS/6000 to build new business applications on their Unix servers rather than to off-load the mainframe. Users and analysts, however, said they expect a hefty mixture of both approaches.

"Because CICS/6000 has such very nice integration with the CICS family, IBM may have their cake and eat it, too," said Bill Moran, a research analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y. "Even if a customer leaves his databases on the mainframe and doesn't downsize, there will be nice communication [between AIX] and CICS on the mainframe."

IBM officials also noted the financial success of the RS/6000 line, introduced in Feburary 1990. The Unix platform is likely to become profitable by year's end, said Bill Filip, IBM vice president and president of the Advanced Workstations and Systems Division.

IBM's 1994 goal, he added, is to become the worldwide revenue leader for the entire Unix market.

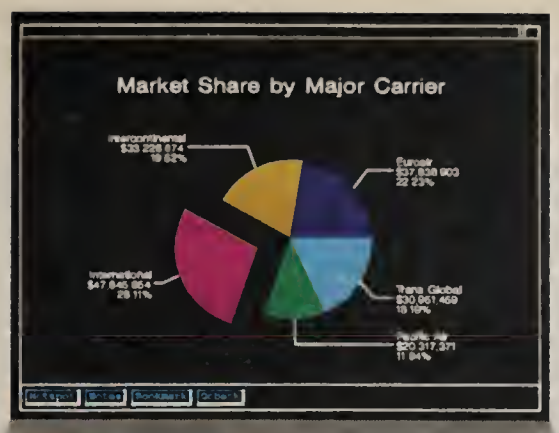
Depending on what kind of Unix systems are counted — midrange, workstations or personal computers — the top market leaders vary between IBM, Hewlett-Packard Co., Sun Microsystems, Inc. and NCR Corp.

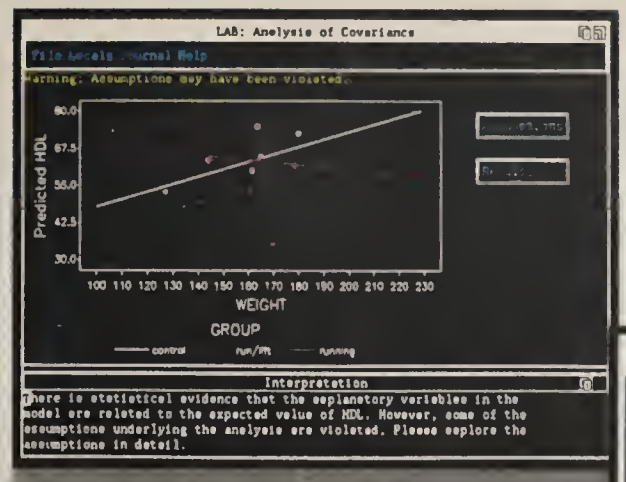
For IBM to reach its goal of revenue dominance in Unix, analysts said, the computer giant needs to roll out symmetrical multiprocessing capabilities for the RS/6000, improve the graphics lineup and deliver faster implementations of the RS/6000's Power Architecture chip.

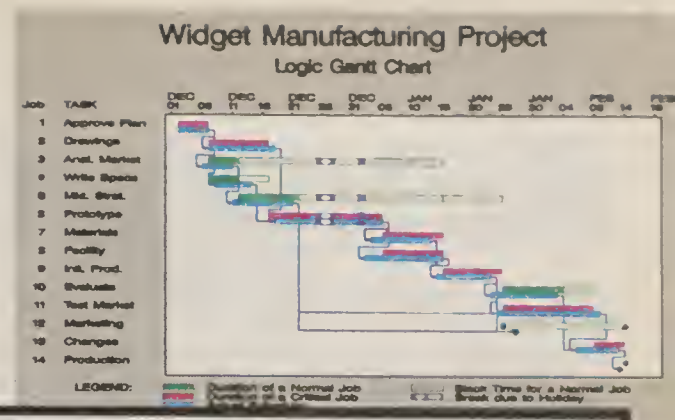
Big Blue opens up

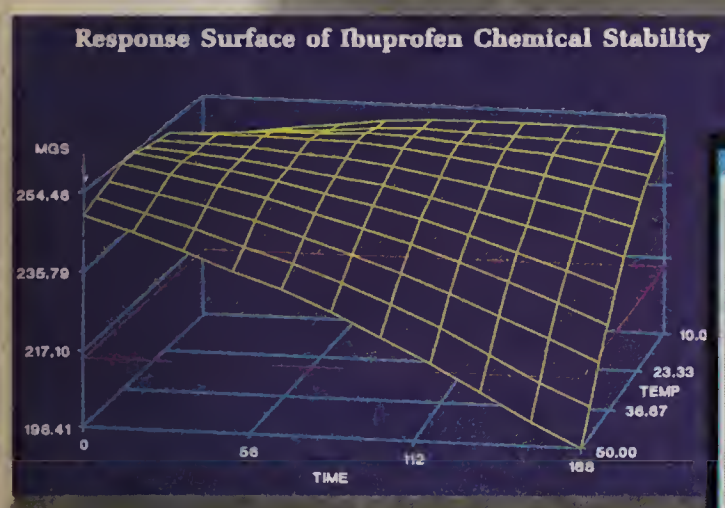
Also highlighted by IBM last week were the following:

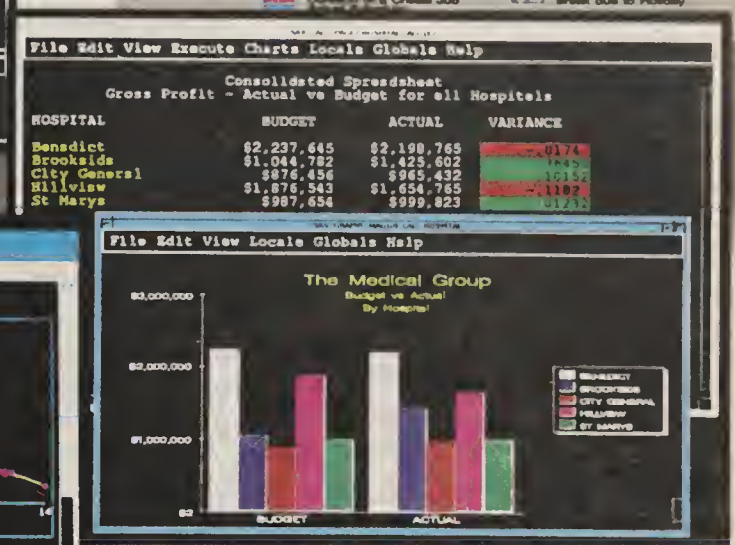
- A hardware boost for the RS/6000 line, with Models 580 and 980 shipping next month with 20% additional performance, enhanced storage, memory, software development tools and systems management. Priced from $70,000 for the Model 580 and $117,800 for the Model 980.
- An upgrade path for the low-end RS/6000 Model 220, with a faster processor supplied in early 1993 that can move up to the PowerPC-based chip later in the year.
- An AIX database — still unnamed — was on display at UnixExpo and is likely to appear in 12 to 18 months, along with multiprocessor versions of the RS/6000.
- Three products, shipping in December, based on the OSF's DCE for AIX/6000 and intended for initial development work. The AIX DCE products, with license charges ranging from $150 to $2,400, provide distributed functions such as directory services.
- Encina for AIX/6000: a suite of products extending the AIX DCE services to address transaction processing capabilities such as database updates. Available in December at license charges ranging from $400 to $1,800.

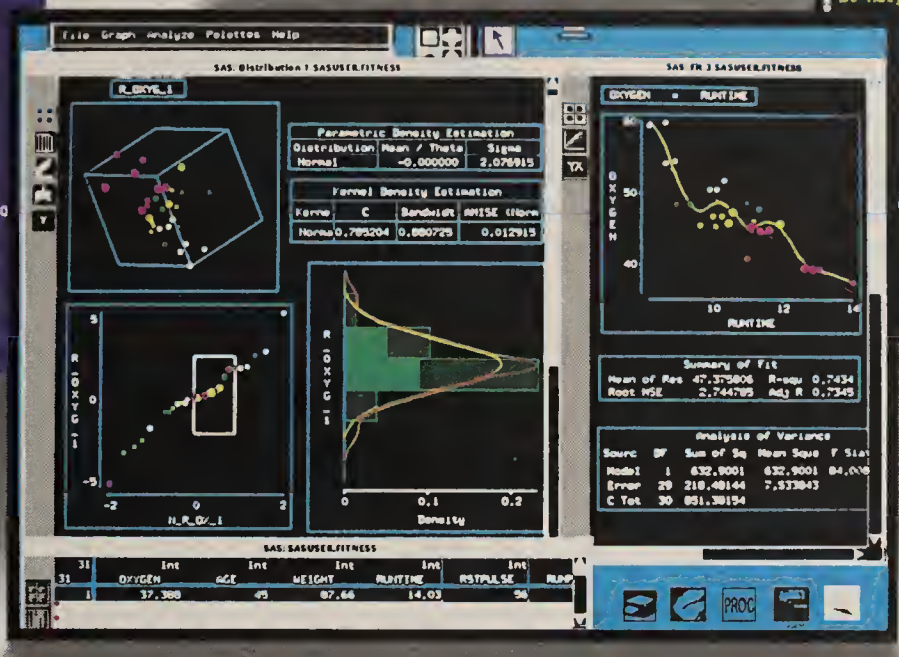












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War brewing for branch sites

HP, others hone internetwork gear for geographically dispersed firms

BY JOANIE M. WEXLER
CW STAFF

Hewlett-Packard Co. and several other vendors loaded up on new product artillery last week in what promises to be a fierce fight for the myriad low-end internetworking opportunities cropping up at corporate branch sites.

HP, Advanced Computer Communications, Inc. (ACC), Newport Systems Solutions, Inc. and Xyplex, Inc. all took aim at companies growing increasingly distributed and seeking low-cost equipment that needs minimal upkeep for their far-flung, lightly staffed locations.

HP hit an aggressive price point with a $4,500 stand-alone router that contains connections to one Ethernet local-area network and one wide-area network.

However, its $6,500 one-LAN/three-WAN router, also introduced last week, is of more interest to customers such as Schlegel Corp., a sealant manufacturer in Rochester, N.Y.

More diversified

The three WAN ports allow Schlegel to create more diverse router paths "so there is no single network point of failure," said Brian Williams, manager of data processing and telecommunications. Most under-$7,000 routers today have just one WAN port.

The HP routers have frame-relay interfaces bundled in and will also connect to Integrated Services Digital Network terminal adapters from Ascend Communications, Inc. and Switched Multimegabit Data Service access devices from Digital Link, Inc., HP said.

"Now that a [router] product is available at such a low cost, I'm going to run out and get quotes on frame-relay service," Williams said. This is because Schlegel has small sites that do not justify $1,000 a month for a dedicated 56K bit/sec. line but need performance levels equivalent to the rest of the company, he said.

HP has followed in the footsteps of Proteon, Inc., which announced a $4,995 router in July that it claims can be configured by nontechnical staff in under 15 minutes. However, Lisa Sjursen, network administrator at Schlegel, said the HP claim, at least, "is a little deceiving."

An individual HP router can be configured in 15 minutes, she said, "but then it took HP personnel two days running diagnostics and 'fiddling' to get it to work with the rest of the network."

Sjursen said Schlegel installed four routers, "and none of the implementations went smoothly," though they were all done by HP — not Schlegel — staffers.

Internetworking vendors have been taking creative approaches to carving out niches in the low-end market; many have built inexpensive stand-alone or personal computer-based routers that require minimal configuration effort, while others have bundled multiple communications services into hublike devices or added compression techniques to optimize network use.

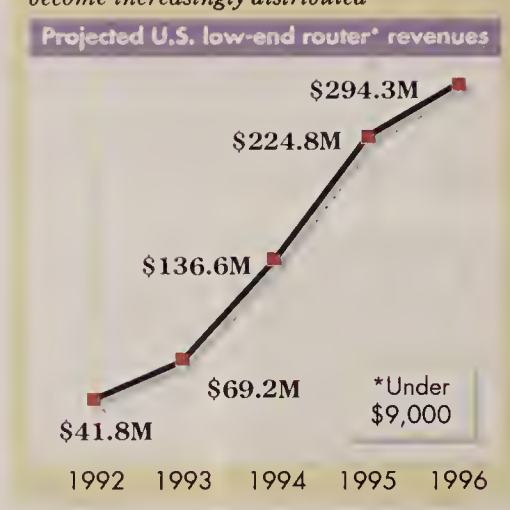
ACC's new router, for example, includes bandwidth optimization features on a device priced from $3,750 to $5,050. The vendor has combined data compression, traffic prioritization features and automatic dial-up of additional lines when 56K bit/sec. WAN links are congested.

Newport Systems also offered an extra-cost data compression module with a release of $995 to $2,195 multiprotocol routing/bridging software for 386/486 PC platforms that competes with Novell, Inc.'s NetWare-oriented routing software.

Meanwhile, Xyplex rolled out a communications hub that integrates routing, switching, terminal serving, wiring concentration and other technologies into a $2,495 to $4,495 base box for which users must purchase modules at additional cost.

Take the low route

Low-end routing will take off as companies become increasingly distributed



Source: CIMI Corp.

Banyan users laud firm's strategy shift

BY MICHELE DOSTERT
CW STAFF

BOSTON — Recent personnel and strategy changes at Banyan Systems, Inc., the Westboro, Mass.-based local-area network vendor, were enthusiastically received by information systems managers attending the Association of Banyan Users International (ABUI) meeting last week.

Previous ABUI conferences were characterized by user complaints about late products, poor support and corporate arrogance. In contrast, this year's attendees were uniformly positive about changes in Banyan's corporate culture, especially its new multiplatform strategy.

"The thing I'm really happy about is the new interoperability stuff. Selling their Enterprise Network Services for Novell's NetWare and connecting to Unix by porting to The Santa Cruz Operation's [Unix] are good starts; now they need to keep it up, connect to more platforms," said Bill Sheehan, a support specialist at Boston-based Stone and Webster Engineering Corp. (see story below).

Banyan's *Hamilton cites key strategic alliances*

ABUI officials and members attribute the changes largely to key personnel additions. Three months ago, Peter Hamilton, a 20-year veteran of Hewlett-Packard Co.'s Network and System Management and OpenView Products Division, assumed the title of Banyan president and chief operating officer. Founder David Mahoney remained chief executive officer and chairman.

"We now have a three-prong strategy," Hamilton said in an interview. "We will develop our Enterprise Network Services product for other platforms besides Novell, and we will port our Vines OS to other platforms." SCO Unix was the first, but other ports will follow, including reduced instruction set computing, he said.

As evidence of Banyan's new openness, Hamilton cited strategic alliances and support agreements with Digital Equipment Corp., Gupta Technologies, Inc., Synoptics Communications, Inc., Apple Computer, Inc., Novell, Inc., Compaq Computer Corp., NCR Corp. and Microsoft Corp. "To better serve our customers, we're building quality alliances so we can provide collaborative support and interoperability to our mutual clients," he said.

Banyan has long had the reputation of a company with great technology and horrible marketing. However, in 1990, Jim D'Arezzo, formerly vice president for European and international marketing at Compaq, became Banyan's vice president of marketing. Most Banyan users said they admire the job he has done in expanding Banyan's market presence.

Under D'Arezzo, Banyan has shifted its emphasis from direct sales to building an effective reseller channel, which has helped Banyan gain mind share in the LAN community and Banyan users gain better access to support. While IS often complains about reseller support, some Banyan users claim that before these changes were implemented, they had difficulty getting support from anyone.

"We now have over 1,000 selling sites worldwide, which is double what we had a year ago," D'Arezzo said. "We're building our channel slowly because we want to guarantee that the resellers we add can provide good support for Vines users."

"Banyan has just opened up so much in the last year," said ABUI Vice President Ted Kull at the Philadelphia office of Banyan (and Novell) reseller Frederick Computers Plus. "They're meeting deadlines, improving their marketing and building user contacts."

Vines users air wish list, complaints during Q&A

BY MICHELE DOSTERT
CW STAFF

Although Banyan Systems, Inc. users were generally happy with the direction the company is taking, they took advantage of a question and answer session with company executives to air a list of requests topped by complaints over Banyan's upgrade pricing matrix for its five-, 10- and 20-user versions of Vines.

Under that matrix, the price increase from five to 20 users is approximately $1,000 more than double the price increase from five to 10 users.

Although the pricing was announced in February, most users were unaware of the change until recently — and decidedly unhappy about it. Banyan officials promised to review the pricing structure but held out little hope that it would change. "We studied our pricing structure thoroughly and felt that this was the best pricing for the value offered," said Jim D'Arrezzo, Banyan's marketing vice president.

Banyan users also expressed concern about migrating from their Banyan Corporate Network Servers (CNS), the non-industry-standard 386- and 486-based servers that Banyan has stopped selling. Banyan responded that while it still considered the CNS systems to be robust platforms, it would soon announce special pricing programs for those wishing to move to Vines on industry-standard personal computer server platforms. CNS hardware would be depreciated by users in the normal course of business.

Users also bombarded company executives with requests to extend Vines support to a number of platforms, including the following:

- Support for RISC-based systems, both as server platforms and as clients. Banyan replied that it is in the process of choosing the first RISC platform to which it will port Vines, and it polled users on their favorite RISC platform.
- Scalable Processor Architecture-based machines from Sun Microsystems, Inc. were the overwhelming user choice.
- Users also asked if Banyan could shrink the size of its native protocols to lessen network traffic and free random-access memory on the client. Banyan said it was always trying to optimize Vines to reduce network traffic. However, the company would give no timetable for enabling users to load Vines into extended memory, which prompted angry murmurs from users.
- Symmetric multiprocessing (SMP) support for Vines 5.0. SMP support is available for Vines 4.11. Banyan officials promised that SMP support would be included in the forthcoming "merge release" of the two versions of the Vines operating system.
- 5250 terminal emulation support so that Vines networks can enjoy the same interoperability with IBM Application System/400s as they do with IBM mainframes. Banyan said no such product was in the works but that it would investigate further.
- Support for application servers, such as print and mail servers. Banyan officials suggested that users investigate using machines running Vines on SCO Unix as application servers.

Pen vendors stress systems' mobility

BY MICHAEL FITZGERALD
CW STAFF

LOS ANGELES — The Pen-Based Expo last week yielded several new products and a strong effort by pen-based vendors to change pen computing's image — almost trying to take the pen out of it. Virtually all the executives at pen-based vendors who were interviewed said the focus on the pen interface misses the point of the technology.

"There is definitely a shift away from the idea of pen-based computing to the concept of mobile computing," said D. Bruce Walter, president of Grid Systems Corp. Walter and numerous others said mobile computing is a familiar concept to users, while the idea of pen computing confuses them.

"The key is not the pen, but the pen is the obvious thing about these computers," agreed Jerrold S. Kaplan, chairman of Go Corp., maker of the PenPoint operating system. "The whole point is mobility."

Dissenting opinion

The lone voice of dissent came from Gordon W. Arbeitman, a senior programmer for pen systems at IBM. Mobile computing "is not the only part of pen computing," Arbeitman said. IBM sees a role for tablet devices in a desktop environment. The company demonstrated a pen-capable, active-matrix, color flat-panel display that it originally showed at Comdex/Fall '91. The prototype product is targeted as a desktop tool.

Arbeitman did agree with Ron Oklewicz, president of Reston, Va.-based tablet developer TelePad Corp., that turning attention away from the pen to the issue of mobility would help pen computers seem a less radical shift from current technology, which should help the market.

"You have to give [information systems] a solution that's close to what they have now," he said. "You can't tell users to throw away what they have in favor of an elegant solution."

Users at the show agreed with this opinion.

Joe Barrett, lead technical analyst for architecture and applied research at Whirlpool Corp. in Benton Harbor, Mich., said, "We don't want to throw technology at a business problem, but [the pen-computing] paradigm is different enough that we wanted to" get pen-based systems in the hands of users to see what reaction the new machines receive.

In the meantime, users continue to wait for products they can work with. Some vendors even said they see the market delays as being positive.

"MIS is frustrated because there is not enough consistently shipping technology to do pilots, but the delay could turn out to be a good thing because MIS will have time to really weigh what they're doing," said Ronald J. Brown, president of Oakland, Calif.-based Notable Technologies, Inc. His firm released PenComm, a 3270 pen interface product, and PenCrush, a software compression utility.

A variety of other products were introduced or shown:

• **Dauphin Technology, Inc.** showed its Dauphin 5500 Pentop, a 5.5-pound system with a passive-matrix color screen and an 80M- or 130M-byte hard drive. The Lombard, Ill.-based maker of portable systems, which won the major Lapheld II defense contract, said it will begin shipping later in the year.

• **PenMetrics, Inc.**, a Corvallis, Ore.-based software maker, showed its FieldNotes, a pen-based geographic information system that lets field workers adapt software for outdoor geography.

• Cambridge, Mass.-based software maker **SuperScript, Inc.** showed PenSieve, which interprets handwriting according to its context to improve character recognition.

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NEWS SHORTS

Borland, Lotus claim legal wins

Lotus Development Corp. and Borland International, Inc. spent about an hour in front of the judge last week regarding their software copyright infringement contest. The judge reportedly refused to grant Borland's request for an immediate appeal and also said he would hold judgment on the issue of the copyrightability of the "long prompts" that Lotus claims Borland illegally copied. True to form, both sides claimed victory, with Lotus pointing out the judge's refusal of the appeal and Borland stating that the judge showed signs of reversing his earlier decision.

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Lotus, Philips in 'Smartphone' talks

Lotus is engaged in negotiations with Philips Electronics N.V. to develop next-generation telephones featuring LCD screens and computer functions, according to industry sources. The project, which will couple software from Lotus and hardware platforms from Philips, will target the emerging market for on-line consumer services such as shopping. Neither company would comment on the report.

Separately, Lotus said it will expand its CC:Mail products to include native X.400 support so that CC:Mail networks can link directly to X.400 networks, such as those provided by public carriers, without having to translate from CC:Mail to the X.400 format. Lotus has not set a price or a rollout date.

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Sprint to broaden bandwidth

Sprint Corp. last week said it will deliver a broadband (faster than 1.5M bit/sec.) network to the industry by the middle of the decade to support emerging medical image, graphics, scientific modeling and other high-bandwidth applications. Meanwhile, the carrier has named router vendor Cisco Systems, Inc. and wide-area gear maker Digital Link, Inc. partners in its contract with the University of California's Lawrence Livermore National Laboratory to create a public Asynchronous Transfer Mode service at T3 (45M bit/sec.) speeds for initial use by the Department of Energy and NASA.

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Execs band to boost Silicon Valley

Silicon Valley, a newly formed coalition trying to get the region's economy back on track, shifted into high gear last week by naming heads of 13 specific committees. Among the business leaders named are Ed McCracken of Silicon Graphics, Inc., T. J. Rodgers of Cypress Semiconductor Corp. and Sandra Kurtzig of The Ask Cos. The group aims to address problems such as smog and overcrowding that are hindering business development in the area.

Cypress' *Rodgers*

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Short takes

Computer Associates International, Inc. introduced CA-Simply Business, a suite of five Microsoft Corp. Windows-based applications. Priced at $567, the package includes accounting, word processing, spreadsheet, scheduling and presentation graphics modules. . . . **Next, Inc.** announced that Chrysler subsidiary **Chrysler Financial** will purchase 2,500 copies of the NextStep 486 operating system for 486 computers. Other new customers include **Mobil Corp.** and **McCaw Cellular Communications, Inc.**. . . . **Motorola, Inc.** said it is working with **Apple Computer, Inc.** to integrate a radio receiver into Apple's Newton Personal Digital Assistant, giving Newton devices the power to receive wireless messages. . . . **Micrografx, Inc.** plans to ship PhotoMagic, a sub-$100 collection of stock color photo images, special effects and editing tools, at the end of the month. . . . A reduced instruction set computing-based adapter from **Rasterops Corp.** announced last week will reportedly allow **Apple** Macintosh II computers to run at the speed of a Macintosh Quadra 950.

California renews EDS pact

BY MARK HALPER
CW STAFF

SACRAMENTO, Calif. — Electronic Data Systems Corp. and California's Department of Health Services last week renewed their Medicaid system vows with a deal that is full of variables and involves a sweep of technology old and new, borrowed and blue.

EDS beat out Computer Sciences Corp. for the four-year deal, which is unlikely to live up to its $399 million potential, according to the state. Still, the pact calls for EDS to process some 145 million Medicaid claims annually and to make as many as 52 enhancements to the system. CSC bid $445 million.

It is not clear how much of the $399 million that EDS bid will be allocated to claims processing, but EDS has secured that portion of the contract, according to Nancy Beaird, executive program director at EDS' State Operations Division.

California has the option to exercise the enhancement portions but almost certainly will not hire EDS for all of them, said Ben Thomas, division chief at the health services department's Payment Systems Division.

Because of California's limited fiscal resources and the shifting nature of the health care business, the state could hire other contractors for some of the enhancements or "some may not get done at all," Thomas said.

For instance, he said the state is not sure it will tap EDS for the integrator's proposed $7 million project to retool the department's information systems operations into a managed health care model. California is looking for a vendor to help match IS with its long-term plan to convert its Medicaid system, called Medi-Cal, from a fee-based operation into a managed care operation for the state's 4.9 million Medicaid recipients.

Other uncertain enhancements include adding a data element dictionary and a treatment authorization system, he said.

Red tape hurdles

The EDS contract takes effect Dec. 1, provided it clears a five-day protest period and a 30-day review by other state agencies. The processing portion will not kick in until June 30. Until then, EDS will continue to process under the terms of an existing five-year contract with the state. The new contract is slated to run four years with three additional one-year options.

While EDS will be modernizing the statewide operation with features such as magnetic card systems for eligibility verification and automated claims adjudication systems, it will continue to rely on older technology for raw claims processing. Namely, claims will run through a Cobol CICS database on an IBM 3090 at the company's Information Processing Center here.

Beaird explained that budget-constrained state government contracts typically run on such older technology and that California has not allocated any funds for updating that portion of the technology. "State governments are not typically wildly enthusiastic about funding just for technology refreshment," Beaird said.

EDS manages the state's leased lines through its EDS Net network, she said. State-run IBM 3090s are used for eligibility verification, while the EDS-operated mainframe is used for claims processing, she said.

EDS also intends to implement automated claims processing systems at treatment facilities and pharmacies. It will start at the pharmacies because many of them, especially the large chains, are already outfitted with computer hardware. EDS is adding a modified version of Telepaid, supplied by Medco Containment Service, Inc. in Montvale, N.J., to its 3090 to support claims processing.

The eligibility systems are slated to come on-line in January 1994, and the pharmacies' claims processing systems will come on-line in June 1994, she said.

Perot loses prospect to former executive

CONTINUED FROM PAGE 1

ble. But it's hard to tell how long that will take," Feld said. He estimated it would take at least six months "and possibly longer."

At Burlington Northern, Feld will preside over a massive IS redesign that will include a purge of disparate minicomputers, workstations and dumb terminals in favor of a common client/server platform. Burlington Northern will continue to operate its three Amdahl Corp. mainframes located at its data center in St. Paul, Minn., Feld said.

The IS overhaul dovetails with a sweeping restructuring of Burlington Northern's business operations in which the company is aiming to improve customer service, cater better to regional customer needs and improve coordination with the IS and business practices of other transportation companies.

Donaldson Lufkin & Jenrette analyst and Vice President of Research Joel Price described the IS overhaul as part of a "major cost improvement plan," which includes layoffs, improved utilization of train capacity and more efficient shop and repair operations.

While Burlington is profitable — it earned $136 million for the year ended Dec. 31, 1991 — "it is not as profitable as other railroads," and revenue "has been faltering," Price noted.

One of the goals of the IS project is to establish common applications in areas such as revenue billing that all transportation providers would use, and thereby make it easier for customers to do business among carriers, as they often do in the transportation field.

Brydges said Burlington Northern's three Amdahl Corp. mainframes will become network servers in the company's client/server scheme.

Both Brydges and Feld said Burlington Northern has not yet selected its server platform.

"It's hard to tell at this point," said Feld, who led a large OS/2-based client/server implementation while he headed IS at Frito-Lay, Inc., a company he left last spring.

Brydges said Burlington Northern plans to scrap a collection of Digital Equipment Corp. PDP 11s, IBM 3270 terminals and workstations from DEC, Wang Laboratories, Inc. and Xerox Corp.

He said the company is looking to Feld to implement functionality much like what he installed at Frito-Lay, where his system was well-regarded for tracking product and supporting differences in local customer bases in terms of prices, customer tastes and other market conditions.

Feld said Burlington Northern decided not to outsource computer operations roughly two weeks before he left Perot on Sept. 7. He also noted that the railroad first became interested in a possible outsourcing deal with Perot because he had made consulting contact with the company prior to joining Perot in July.

While conceding that the railroad's rejection of Perot, its deciding to outsource, his leaving Perot and his winning a contract with Burlington Northern all entailed "strange timing," Feld also noted that his exit and subsequent contract acceptance "were separate decisions."

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IBM, DEC sign disaster recovery deal

WHITE PLAINS, N.Y. — Customers whose data centers go down during disasters may be able to recover slightly faster, thanks to a deal inked last week between Digital Equipment Corp. and IBM.

The agreement calls for DEC and IBM disaster recovery centers around the country to be linked electronically. It will simplify the task of moving telecommunications and applications from the customer's downed data center to computers at IBM and DEC sites.

For customers to qualify, they must sign up with the disaster recovery services of either or both companies.

Before the deal, a user with critical applications on both vendors' equipment would move the IBM applications to an IBM recovery center and the DEC applications to a DEC recovery center. The user's staff would then establish communications between the two places, an often time-consuming process that left users without access until the links were complete.

Now those telecommunications links over T1 lines will be automatically provided between the IBM and DEC centers. Users need only to call the DEC center or the IBM center instead of both.

ISSC turns to renowned CIO

CONTINUED FROM PAGE 1

technology that reportedly characterized his reign as head of Security Pacific Automation Corp. (SPAC), the IS subsidiary of the nation's then fifth-largest bank.

"Back before [Bank of America], our perspective on Singleton was that he had set up a very bureaucratic 'technocracy' at SPAC," recalled Los Angeles-based IS consultant Andrew Garsten, who formerly worked in the trust group's IS department at Security Pacific. "But that was because we didn't see everything they were doing — the more strategic stuff like optical character recognition and check processing."

Retrospect, Garsten said, has altered his view and that of many of his former colleagues. "Singleton had a political vision, and he was able to take it all the way to the top of the company and sell it there," he said, "At the time, we criticized him for being such a political animal, such a marketing maven, but he was extremely effective at it, and he led Security Pacific to a position where it was strategically relying on information technology."

Beyond banking

Jorgensen declined to detail what Singleton will be doing under his newly created title but noted that his efforts will not be confined to the banking arena. He reiterated ISSC's resolve to fan out well beyond conventional outsourcing into a panoply of custom-tailored alliances across a broad span of vertical industry niches.

Even without details in hand, however, one industry observer said he sees Singleton's arrival as an important strategic advance for ISSC.

"This is something they need badly because right now, they don't do their own new business development — they get that from IBM," noted J. P. Richard, vice president of outsourcing at Vienna, Va.-based market research firm Input. ISSC's reliance on its parent for new business development, Richard said, has placed the subsidiary at a competitive disadvantage.

"Lawyers who have worked on some of the major outsourcing deal negotiations have mentioned that it loses points for ISSC when they send in IBMers who aren't as well-versed in outsourcing to go up against teams from EDS who know it inside-out," he said.

Singleton was not available for comment.

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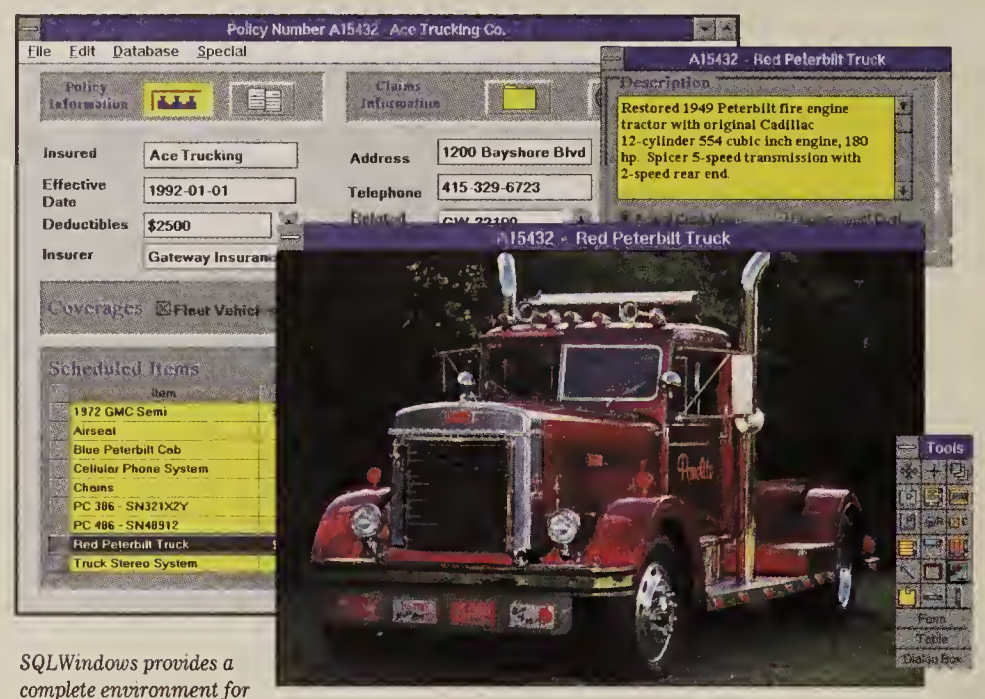

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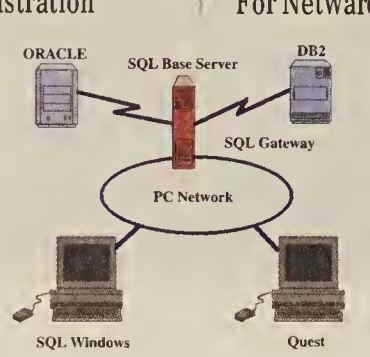

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Seybold takes vendors, publishing industry to task

BY CHRISTOPHER LINDQUIST
CW STAFF

SAN FRANCISCO — Long lines and delayed keynotes got Seybold San Francisco off to a slow start last week. However, things picked up quickly at the show when organizer Jonathan Seybold took the podium.

Seybold kicked off the electronic publishing conference by reminding vendors of their shortcomings and calling for a restructuring of the electronic publishing industry.

Vendors, according to Seybold, have yet to deal effectively with a number of issues, including color, rich data formats (including images, sound and video) and the "skill gap" between people who know the technology of printing and those who know the craft of printing.

He also said the industry needed to be restructured and emphasized that old relationships are based on the limits of old technology and no longer apply.

Seybold also suggested that companies not participating in this restructuring "may be blindsided."

The speakers who followed Seybold all seemed intent on proving that they would not be among those caught by surprise.

Notable among the keynotes were Apple Computer, Inc. Chairman and Chief Executive Officer John Sculley, who reiterated Apple's desire to pursue a strategic thrust into "higher-end publishing systems" in 1993. Sculley indicated that Apple will pursue other platforms, including Microsoft Corp.'s Windows, and the IBM and Apple PowerPC, and will expand its offerings to include everything from media servers to digital cameras during the next 36 months.

Next, Inc. Chairman and CEO Steve Jobs, Sculley's onetime counterpart at Apple, was next on the docket, and he wasted no time firing the first volley at Apple. "I'll show you some stuff that's actually real," Jobs said, drawing laughter from the crowd as he climbed to the stage. Jobs then began preaching the gospel of "operation productivity" vs. "management productivity," claiming that while the former is where computers produce results, the latter is where most computer companies have focused their attention.

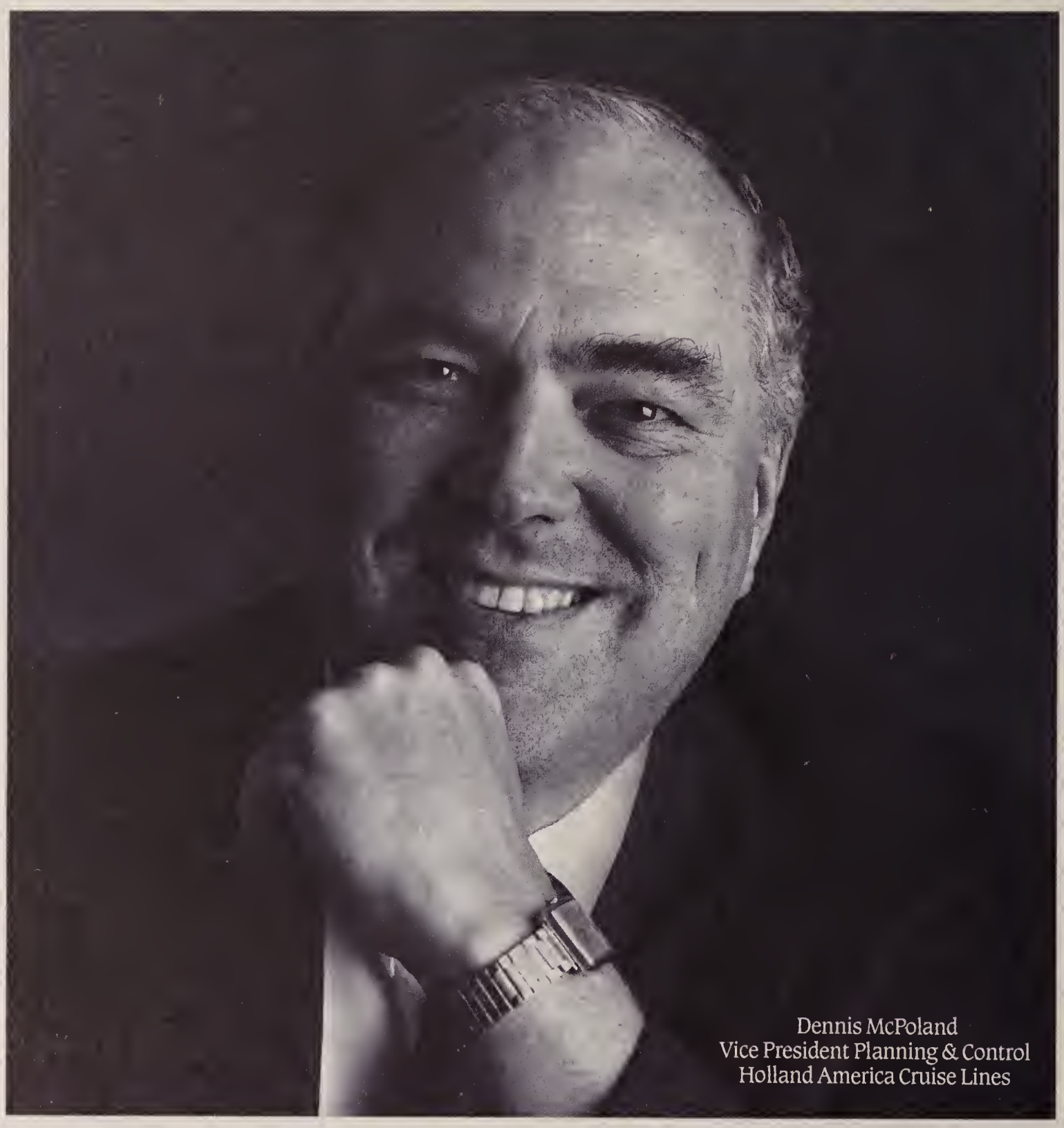
Jobs then demonstrated NextStep Version 3.0, the latest generation of Next's object-oriented environment, using it to develop an application that created a link to a database from which information could be immediately sent to a publishing package for printing.

Focus on print

Printing was prominent in the statements made by Adobe Systems, Inc. President and Chief Operating Officer Charles Geschke as he demonstrated the company's new page-rendering accelerator chip, PixelBurst. The chip, which will be available only through OEMs, provides up to 10 times faster page rendering for some images. Geschke also indicated that PhotoShop for Windows should be available sometime early next year.

Among the other vendors that announced products at the show were the following:

- **Adobe** announced a deal with Sun Microsystems, Inc. under which Sun will integrate Adobe's Display PostScript technology into the Solaris environment. Adobe will also port its Adobe Illustrator and PhotoShop applications to Solaris as part of the agreement.
- **Interleaf, Inc.** unveiled Interleaf RDM, an object-oriented document management system that can reportedly manage data across a variety of applications and platforms, including Windows, the Macintosh and Unix. The Windows version is scheduled to be released during the first quarter of 1993. Pricing will range between $2,500 and $3,000, depending on the quantity purchased.



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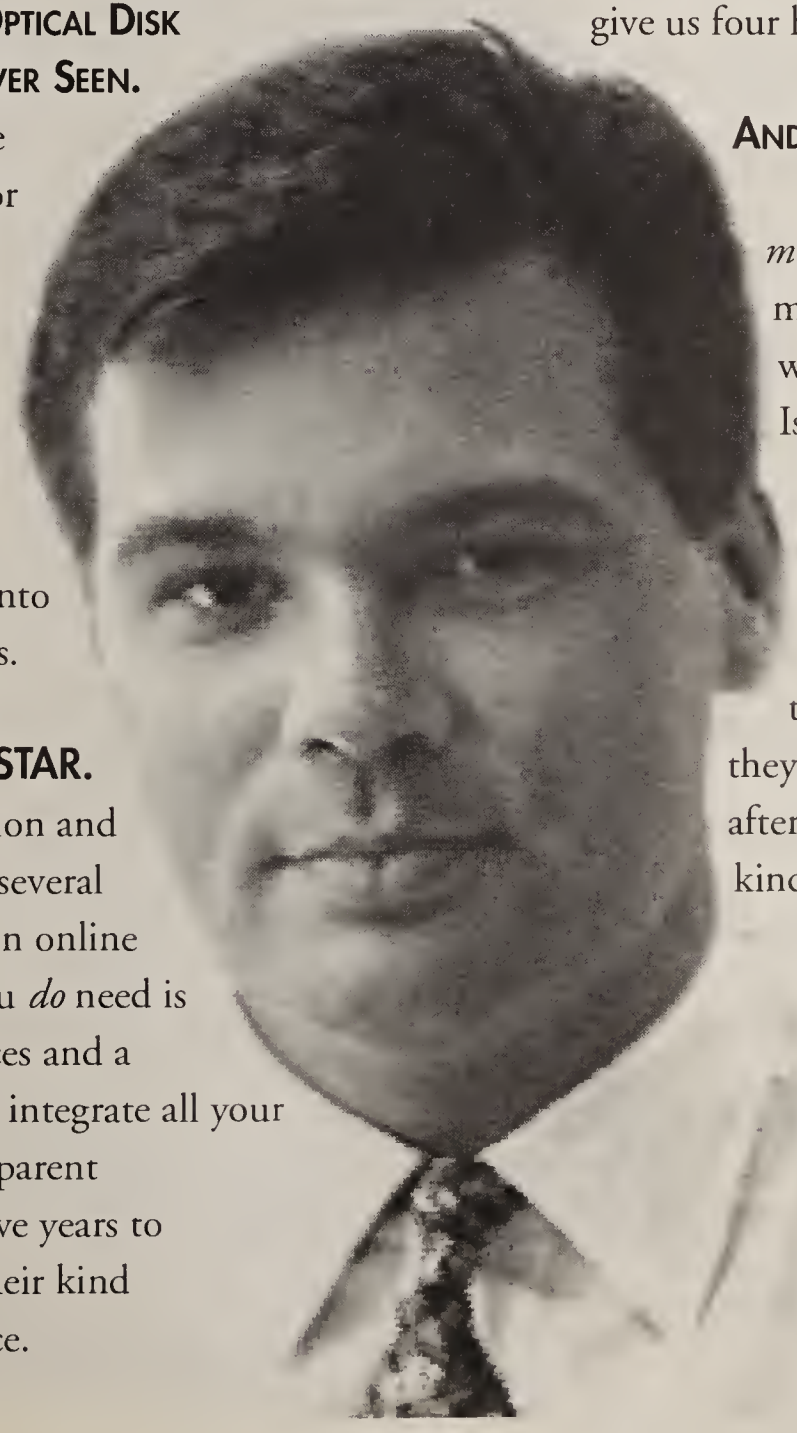

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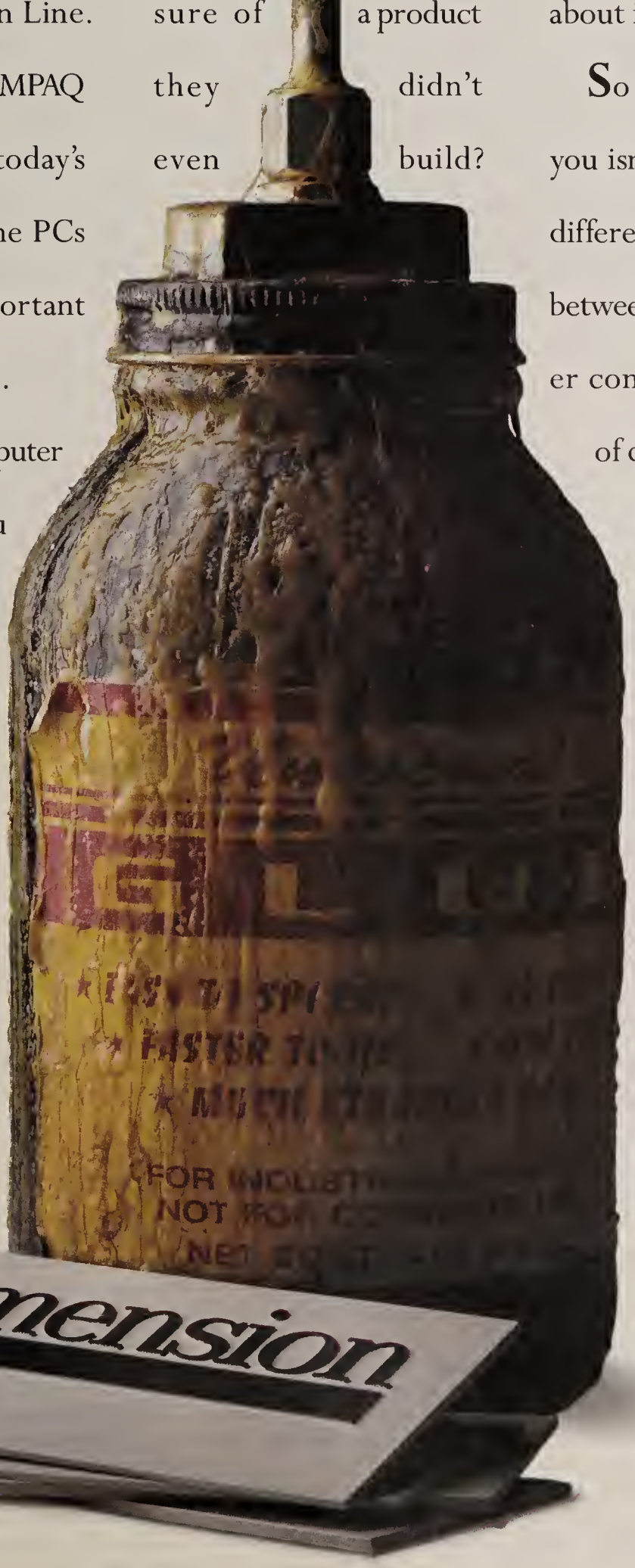

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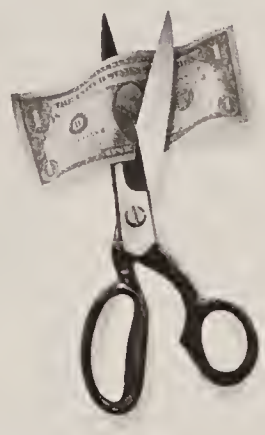

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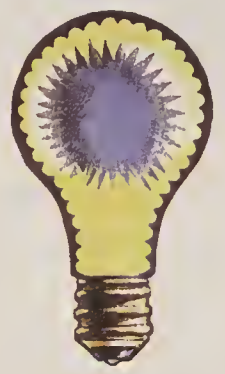

Some ideas are better than others. Unlike a lot of today's clones, the new COMPAQ PCs are all designed, engineered and tested by Compaq.

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ADVANCED TECHNOLOGY

TECH TALK

Paste-on antenna

Two communications researchers at the Georgia Tech Research Institute in Atlanta have developed a new kind of broadband antenna. Called a spiral-mode microstrip antenna, the device is thin — less than a third of an inch — and can simultaneously serve a number of applications such as radio, cellular telephone and other wireless networks. The researchers, who founded Wang-Tripp Corp. to market the antenna under an exclusive license from Georgia Tech, also foresee applications in inter- and intraoffice communications.

Baby calculators

Babies, it seems, have innate computational abilities — despite the worrisome decline in math and science scores of their older siblings. In a report published last month in *Nature*, a researcher at the University of Arizona in Tucson demonstrated how infants as young as five months were capable of noticing addition and subtraction on small sets of objects. In the test, rubber Mickey Mouse dolls were presented to children and then placed behind screens, replicating correct and incorrect results to a 1 + 1 = and 2 - 1 = calculation. Seeming to expect the correct number of dolls to emerge from behind the screen, the infants looked significantly longer at the dolls when the wrong number of Mickeys appeared.

Optical multiplexer

An experimental device able to selectively switch multiple information-carrying wavelengths from one optical fiber to another has been invented by Bellcore, the research and development arm of the seven regional Bell holding companies in Red Bank, N.J. The so-called integrated acousto-optical filter could obviate the need to electrically switch channels, effectively increasing the speed and efficiency of optical networks. Bellcore said its filter works 1,000 times faster than current optical multiplexing technologies.

Is that John Hancock or Hancocks?

Technologies for capturing signatures abound, but verification systems are rare

BY ELLIS BOOKER
CW STAFF

In the shadow of computer-to-computer transactions, an individual's signature — be it on a contract or a check — continues to be the quintessential mark of business.

Surprisingly, while technologies for electronically capturing, storing and presenting signatures abound, far less are commercially available in the way of *automated* systems for comparing signatures.

"All banks have so-called signature cards," explained Steve McNair, president of FTP Consulting Services, Inc. in Euless, Texas. "Some small banks still view the [physical] card. . . . At others it's on microfiche, and still others have personal computer or mainframe-based systems to present it on a screen."

Nor is banking the sole application for signature image presentation.

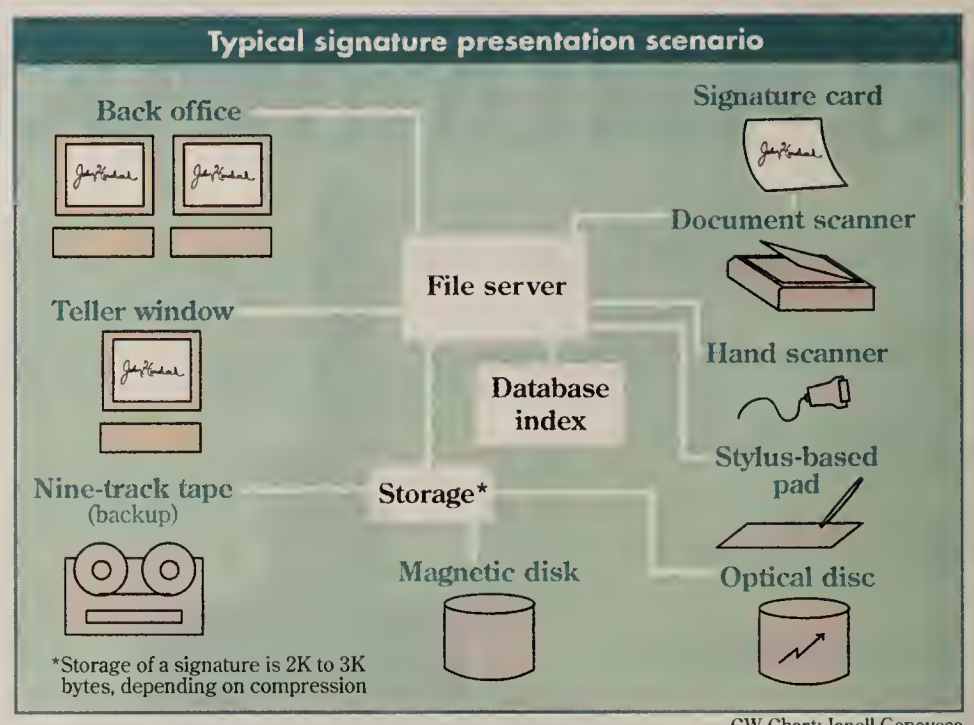
In April, voters in New York began using a verification system dubbed Signature Capture, Reproduction and Imaging System for the Board of Elections (SCRIBE). The $9.1 million system was developed by Andersen Consulting in Chicago; when fully implemented next year, SCRIBE will service 3 million voters and 23,000 election inspectors.

Still, McNair said he is aware of only one company with an automated system for comparing an on-file signature image with an image of a signature stripped off a check. And that firm — DocEye in Sweden — until now had done business exclusively in the Netherlands.

Why isn't automated verification more common? According to McNair, the answer has to do with cost-justification for the technology and the way the back offices of banks really work.

"Banks do [signature verification] on high-dollar items," he said. "But a lot of banks, until they get burnt, are not doing the signature verification they ought to be doing."

Joe Uhland Jr., director of marketing and sales at SQN, Inc. in Rancocas, N.J., agreed with this assessment.



CW Chart: Janell Genovese

"We are good at taking images from the file. And we know how to capture the signature from a check," Uhland said. SQN has installed several hundred of its signature presentation systems at some 150 U.S. banks and has digitally scanned some 40 million signatures over the years.

Uhland said human intervention is still needed with a majority of signatures. Many checks have illustrations printed on them — "like a mural of a sunset where the signature goes," he said — and that makes automated recognition difficult.

One way around the comparison of signature images is to compare the unique pen-stroke pressures made during a signature. Such systems use a pressure pad to record the image of the signature and the velocity and vectors of the pen as it completes the mark.

But McNair said retail establishments have not gravitated toward these systems because of cost.

On the other hand, companies ranging from clothing retailers to United Parcel Service, Inc. have begun deploying pen-based systems to capture signatures at the point of sale.

But McNair observed that this application does not involve verification.

"Retailers want that signature so they can do an American Express-type statement, with a signature," he said.

The issue of how to verify identity has returned with a vengeance — and a new kind of credit card scam proves the point. In the scam, thieves armed with a valid card number encode the number onto the magnetic strip of another charge card. Later, when they make a purchase with the fake card, the stolen number read off the magnetic strip — not the one on the face of the card — is used for payment.

The solutions to this and other frauds could involve systems for comparing signatures. But analysts state that, for now, the complexity and expense of these systems makes it more likely that simpler alternatives, such as personal identification numbers, will start being used in conjunction with charge cards.

And what about the signature? Will it go the way of the pocket watch?

"I think the signature's going to be around for a long time just because it's so universal," Uhland said.

"Besides," he added, "it's a lot less invasive than, heaven forbid, a retinal scan."

New crop of notebooks coming

BY DAVID KELLAR
IDG NEWS SERVICE

TOKYO — Notebook personal computers will gain the storage capacity of desktop computers, and desktop capacity will reach into the gigabytes once manufacturers begin using the new crop of high-capacity 2.5- and 3.5-in. hard drives displayed at the recent Data Show '92 in Tokyo.

Toshiba Corp. started the race with its announcement earlier this month of a 213M-byte, 2.5-inch hard drive that is scheduled to start shipping next month.

Hewlett-Packard Co. displayed its "Kitty Hawk" 1.3-inch hard drive. At barely 32 grams, the lightweight system currently offers a maximum capacity of 21.4M bytes. Mass production is scheduled to start early next year, an HP official said.

Maxtor Corp.'s highest capacity offering in the 2.5-in. form factor is currently 128M bytes, but a 256M-byte model should be ready in time for the Comdex/Fall '92 show in November, an official said.

Seagate Technology, Inc. showed both 1.05G-byte, 3.5-in. and 209M-byte, 2.5-in. hard drive models. The 0.75-in.-high, 2.5-in. model achieves 200M-byte-class capacity using conventional aluminum platters, according to Seagate. Volume production will begin later this year.

Quantum Japan exhibited a 1.25G-byte, 3.5-inch hard drive that is scheduled to enter volume production at year's end. In the 2.5-in. form factor, Quantum showed a 160M-byte drive. Sample shipments are expected to start shipping at the end of next month, according to a Quantum official.

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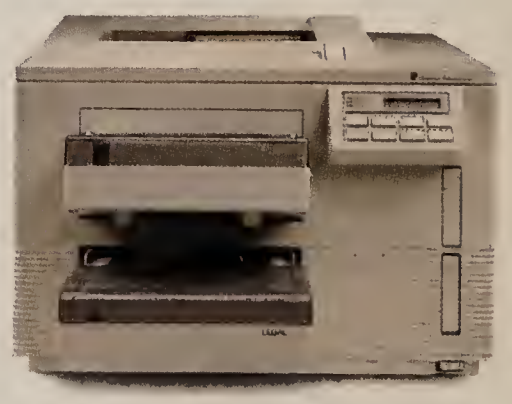
Network printing.

When it comes to network printing, you want to move swiftly. Give the job to the LaserJet IIISi printer from Hewlett-Packard.

The LaserJet IIISi printer has a 17 page-per-minute engine and a RISC-based formatter for fast text and graphics. It's also network-ready. When you add an HP JetDirect card, the printer is seen as a node on the network. That means you can place it anywhere along the network. Anywhere your users need easy access to their output. You're no longer limited by a faraway server.

The LaserJet IIISi avoids bottlenecks by pulling data through the interface card 30 times faster than the standard parallel rate. It is therefore able to print 18 times faster than ordinary printers. And, since your file server is relieved of some print server functions, you'll enjoy faster transaction times and increased speed across your entire system.



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IBM LAN Server	*Token Ring (4/16 Mbps)*
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EDITORIAL

Gimme access

Who says big government is the enemy of free enterprise?

Certainly not the Federal Communications Commission, which this month took another step in a series of recent moves to bust up the local telephone monopoly on users' budgets.

The FCC's landmark decision allowing private carriers to compete with telephone companies so that business customers can receive complete point-to-point interstate services is good news. Viewed with other recent decisions, it's part of an overall sign that the new FCC — under Chairman Alfred Sikes — is taking user interests very much to heart.

The FCC's move will permit vendors, other than local telephone companies, to tie into local lines in order to connect customers to long-distance carriers. Therefore, corporate users will soon be able to buy long-distance service that completely bypasses the Bell system, giving them far more options for playing competing vendors against each other. At this point, corporate customers are the only ones who'll benefit, and the changes don't apply to intrastate service. But the trend is clear.

Sikes summed up his philosophy last year in an interview: "I believe strongly in pluralistic markets. In order to... dramatically enhance user options, we've got to have very few entry barriers."

Amen. In the past year, the commission has also moved to further deregulate AT&T, set aside bandwidth for wireless communications before that market even hits its stride and proposed that users of switched services be given the same equal-access choices it just provided to users of dedicated lines. It will also offer local telephone companies the flexibility to compete more aggressively on price and service.

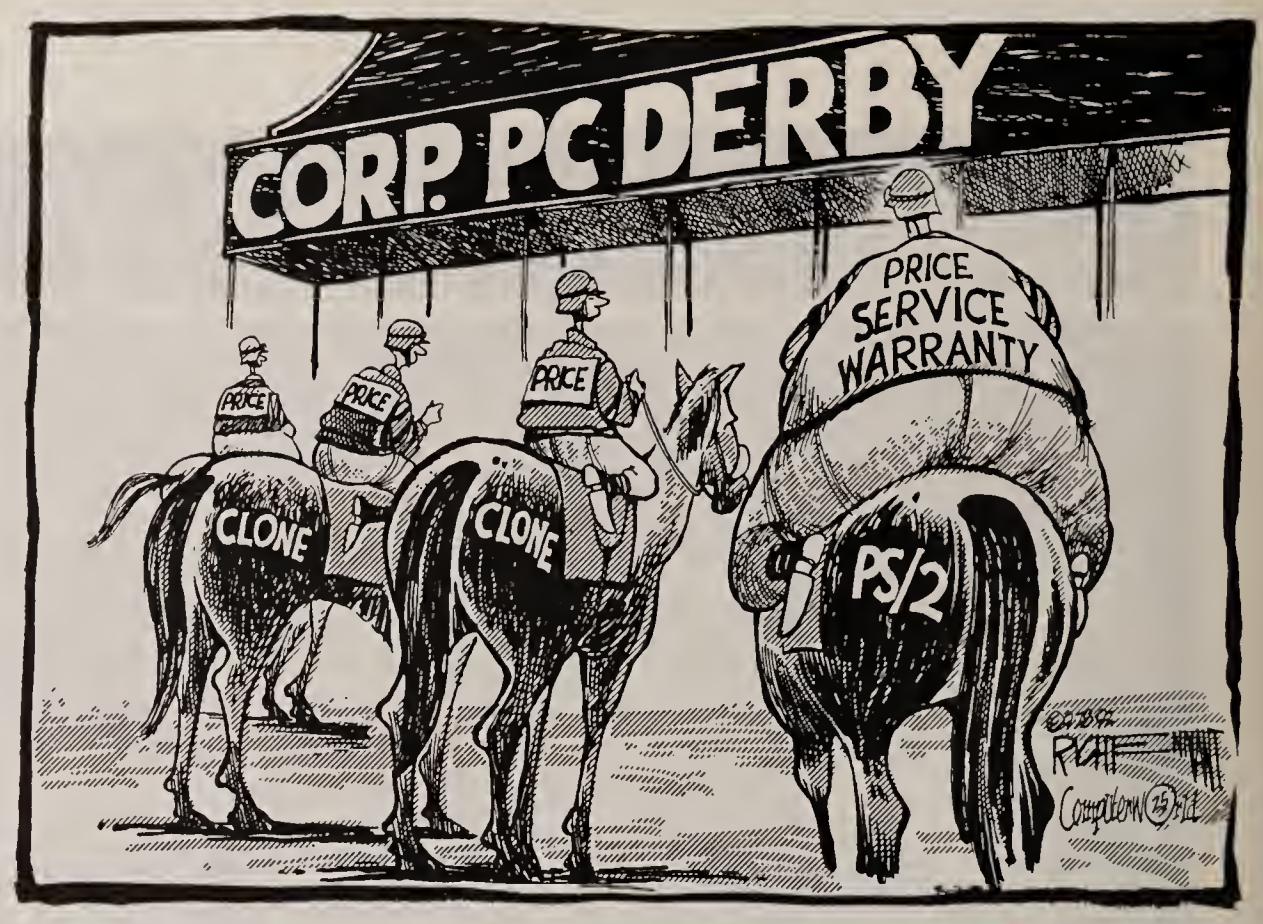
The locals' argument that competition will hurt remote customers by squeezing telephone profits doesn't hold water. Those same customers should also have more options to choose from.

All this isn't going to make life any easier for the beleaguered telecommunications manager, who can't be blamed for sometimes pining for the days when installing a telephone line was as simple as calling Ma Bell. But that simplicity carried a steep price. And can anyone really argue that competition in long-distance services hasn't been a plus for business?

Competitive pricing has made telecommuting viable, spurred the growth of videoconferencing and may lead to fax machines carrying more information than first-class mail by the year 2000. It has also made calling cross-country as cheap as calling across town in some areas.

Sure, regulation is simpler. Remember how much simpler it was to fly cross-country before airline deregulation? All it cost was a month's pay. I'll take my chances and opt for a choice.

Paul Gillin, *Executive editor*



LETTERS TO THE EDITOR

Focus offtrack

Regarding "Client/server on track at railroad" [CW, Sept. 7], as James Shefelbine's supervisor, I feel you misrepresented our data processing environment at Burlington Northern.

Our purpose in developing the Unix-based network was to allow users access to the most appropriate environment for their work needs — RISC, PC or mainframe — and we have done so with the support and cooperation of our computer operations group. It was our understanding that these accomplishments, and not your obvious prejudice against mainframe data processing shops, was to be the article's focus.

Computerworld is a highly respected trade publication and needs to positively focus on information technology development.

Jean Remus Arndt
Fort Worth, Texas

Pace group clarifies Wang statement

I strongly object to "Users 'dis' Wang VS" [CW, Inside Lines, Aug. 3].

The statement "We're definitely moving away from the Wang name toward more open themes" in no way is meant in the derogatory sense.

Our conference is called Pace '92 and is sponsored by the Americas Pace Special Interest Group. The Pace '92 theme is "At your own Pace," which means moving toward open systems while maximizing investments in the VS.

I have no interest in slamming Wang. Wang and its user groups continue to have very strong partnerships.

Ramsay Millar
Chairman
The Americas Pace Special Interest Group

Few opportunities in PC programming

I was somewhat dismayed by your cover story, "'Old-timers' wrestle with dinosaur image," [CW, Aug. 24] which seems to imply that most Cobol/CICS/MVS programmers will find themselves unemployed in the next few years unless they acquire PC programming skills quickly.

It is surely true that many corporations have cut back severely on personnel in every area, including programming, during the past few years.

I am doubtful, however, that the opportunities in the PC programming area are really very great. It is unclear to me how many corporations are actually moving production systems to PC LANs on more than a small, experimental basis, and it is unclear to me that there is a compelling reason to do so.

Why, in principal, should hundreds of small computers connected by cables be less expensive than one large computer? If anything, a LAN seems to be far more complex than a mainframe and includes far more possible points of failure.

Is the tremendous cost-saving potential of LANs really more than the marketing hype of certain technology vendors?

Jacob Stein
Monsey, N.Y.

Different ball game for career women

Regarding "The buck stops here: *Computerworld* 1992 salary survey" [CW, Sept. 7], James Hackett, director of legislative data systems at the Rhode Island General Assembly in Providence, is part of the problem, not part of the solution.

In the article, he is quoted as saying, "I'm critical of [women] that work for me that don't demand more and that haven't sought management positions." His operative verb is *critical*.

A sensitive manager, of either gender, would be "helpful" or "eager to mentor" or "encourage." But, like Henry Higgins, Hackett wonders, "Why can't a woman be more like a man" and *demand*.

Well, Mr. Hackett, women don't generally demand; we don't find it very fruitful, and when we do, we're accused of being "bitchy."

The aggressive, demanding personalities you seek are the hallmarks of dysfunctional (and generally male-dominated) organizations that women of my acquaintance find so stifling.

A more enlightened manager would look for ways to entice women into managerial roles where their unique styles and skills could work wonders.

Carol Anne Ogdin
Santa Clara, Calif.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include a phone number for verification.*

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One more aid to discrimination

Section 1706 doesn't give minorities, small businessmen a fair shake

REP. MAJOR R. OWEN

If we are ever going to approach fairness in our tax laws, we must repeal Section 1706 of the Tax Reform Act of 1986, which discriminates against self-employed computer professionals — and minority entrepreneurs in particular.

Section 1706 effectively made it more difficult to classify computer consultants as independent contractors for employment tax purposes. It requires businesses to use a 20-question, common-law test for determining whether these consultants are employees or independents.

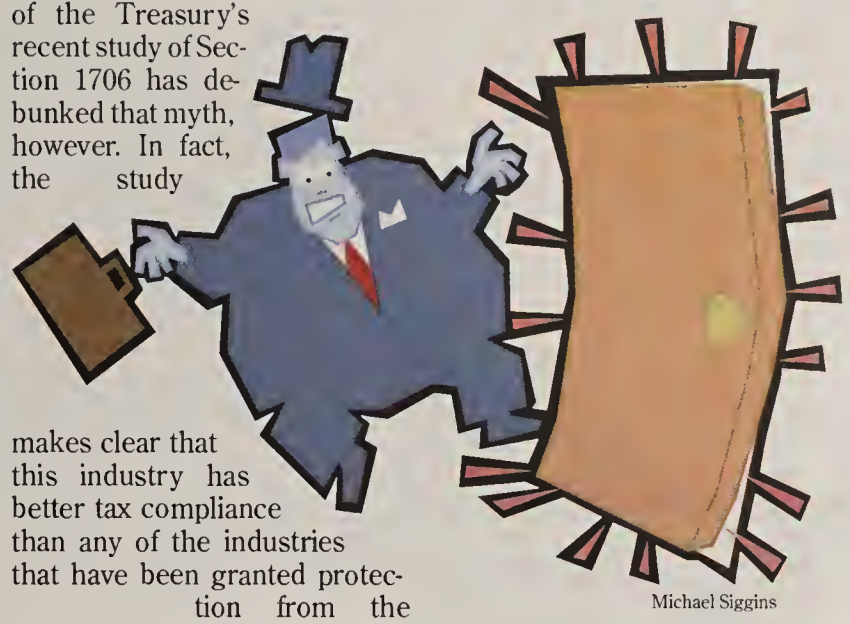
The test is so troublesome that Congress in 1978 created a "safe harbor" provision that allowed businesses to make the determination based on reasonable judgments and customary industry practices. Until we do something about the unpredictable common-law test, all taxpayers deserve some sort of secure haven as a backup.

The problem is that Section 1706 removed the safe harbor from only one industry — the technical services industry — because of a mistaken belief that tax compliance was particularly bad in this field. The U.S. Department of the Treasury's recent study of Section 1706 has debunked that myth, however. In fact, the study makes clear that this industry has better tax compliance than any of the industries that have been granted protection from the common-law test.

> NEWLY self-employed consultants — especially minority entrepreneurs — stand little chance.

The point about discrimination has particular importance to me. I have heard from many African-American computer programmers and analysts who have had the door to self-employment slammed in their faces because of Section 1706.

Many businesses are unwilling to use the services of valid, self-employed consultants because they do not want to attract the attention of IRS auditors.



Michael Siggins

Of those businesses still willing to hire independent consultants, many have candidly admitted that the common-law test prompts them to look for consultants who rent expensive office space, own expensive equipment, regularly advertise and have several well-known clients.

As a result, new entrants into the ranks of self-employed computer professionals — and especially minority entrepreneurs — stand little chance. Big, established firms get bigger, while new, small businesses without fancy offices and equipment and blue-chip clients are cast aside.

Section 1706's discrimination against the technical services industry has resulted, in turn, in a second discrimination against an already disadvantaged class.

Unjustifiable

My new congressional district will include Brooklyn Technical High School, which has a high percentage of African-American, Hispanic and Asian students and trains many of tomorrow's computer professionals.

Some of these students may have the dream of being self-employed in the growing high-technology industry. How can I justify a discriminatory law like Section 1706 to them?

A few businesses claim that it would be too much trouble to repeal Section 1706 because they have learned to live with it and, indeed, profit handsomely from it. They are sitting pretty and want to further insulate themselves from the competition that will result from more entrepreneurship.

But if they were sitting on the other side of the fence, where the view isn't quite as pretty, their attitude would be very different. Lots of people make a living with all sorts of discrimination, but that hardly means that discrimination should be continued.

Owens (D-N.Y.) is a member of the U.S. House Committee on Education and Labor.

Pinocchio vendors: Selling you the world

ROBERT STEARNS

These are tough and competitive times. There are too many vendors with similar products, all trying to sell to the same group of customers. In order to get attention, vendors have had to turn up the volume. In the process, a few cross that fine line between truth and fiction. They are not overtly lying, but their noses are getting a bit longer.

If you are having trouble telling if your vendor suffers from Pinocchio Syndrome, perhaps the following list of common misstatements will help:

• **"This is not just an OEM deal. It's a strategic partnership."** The implication is that there's more being shared here than just a specific product, and this should be more beneficial to the customer than a simple distribution agreement. In the vast majority of cases, this is simply not so, particularly from the perspective of the supplying vendor. It's just that one or both of the vendors worry that a straightforward OEM deal will be seen as a sign of weakness.

• **"If we (or when we) replace the OEM product with one of our own, we'll continue to support the older product, and the new product will be fully compatible."** Customers who vendors anticipate will resist buying an OEM product are salved with the implication that the situation is temporary, that an in-house-developed product is on the way (perhaps the result of newly acquired know-how via the "strategic partnership").

Customers who fear that the OEM deal may be temporary and that they should buy directly from the original manufacturer are assured of continuing support, updates, parts, even compatibility with future generations.

The truth is that in the vast majority of cases, OEM deals continue much longer than either partner anticipates. The larger vendor's internal development efforts can never quite seem to leapfrog or even catch up with the OEM technology, and original manufacturers are reluctant to end long-term, successful distribution relationships.

If an OEM relationship does end, however, customers should not expect support to continue for long. Divorce is ugly, and compatibility between generations is very difficult and costly to achieve (assuming it is even desirable).

> IF AN OEM relationship does end, customers should not expect support to continue for long.

• **"Release 1.0 is fully beta-tested and works perfectly."** Release 1.0 *never* works perfectly — that's why there's a Release 1.1, and that's also why it's a good idea to get a list of beta-test site customers.

• **"That feature is planned for the next release, but (don't worry) it's field- upgradable."** Vendors call this "selling futures." Sometimes the claims are valid (and someday you may win the lottery). The desired feature may or may not be in development. Even if it is, it may not be in the next release — hell, it may never work. It may also never work but still be in the next release, which is a lot worse.

Besides, field upgrades are often very bloody affairs and often performed not by a senior development engineer but by a fairly inexperienced customer service agent. In other words, you might be better off if the vendor is fibbing.

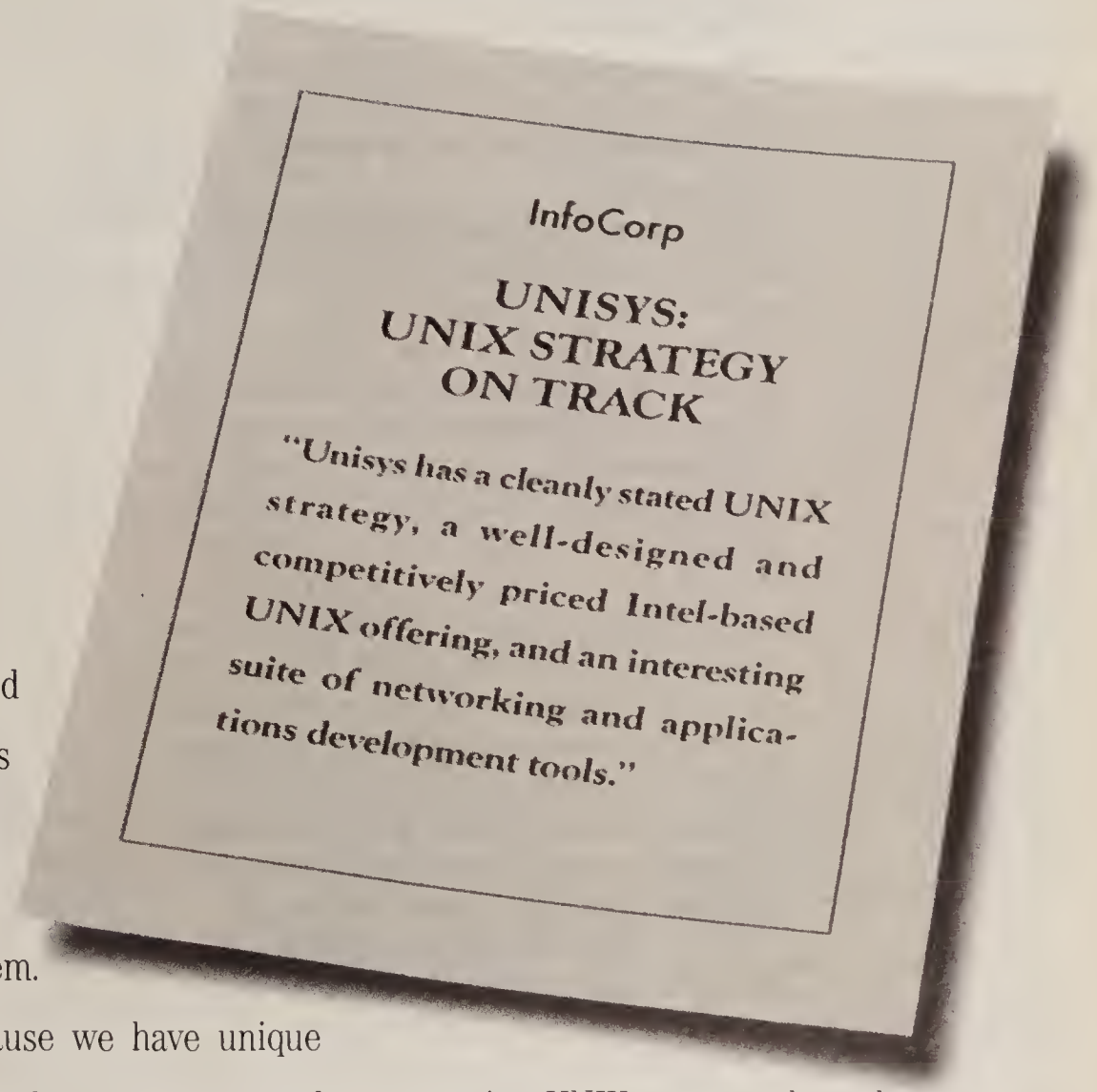
• **"We are fully standards-compatible."** For anything more complex than a cable, this claim is usually meaningless. Which standards? De facto standards like SNA or NetWare? Formal standards like those approved by CCITT? Standards information, like OSI? All of the above? Some of the above?

The fact is that in most complex products you'll find a mixture of standard and proprietary approaches, and that's usually fine. Just make sure you understand what's being said.

Stearns, a 20-year industry veteran, works for an international consulting company.

Recently the analysts looked into our UNIX strategy and discovered what sets us apart.

Vision.



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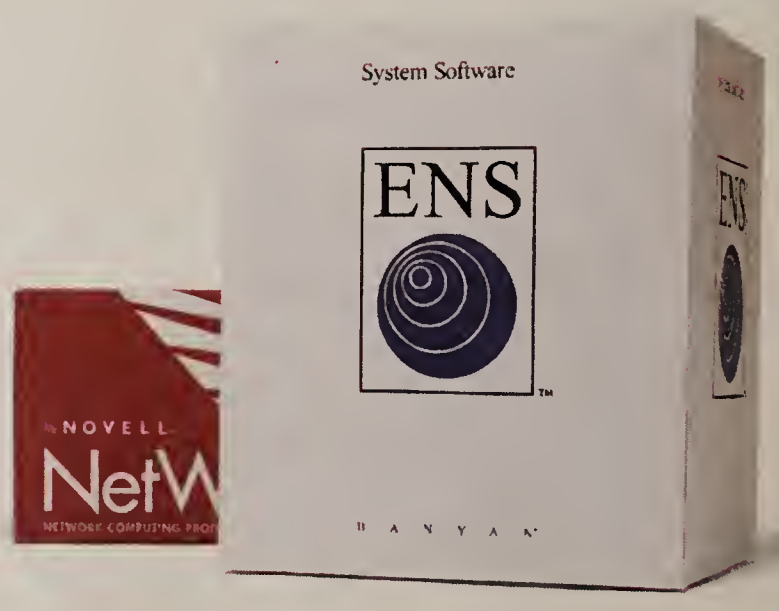


It's trick or trick for IS in October

Beware of a slew of new viruses, including Halloween, Datacrime, Karin

BY JAMES DALY
CW STAFF

There will be many tricks but few treats for information systems security managers this month as a gaggle of new viruses surface. The Octoberfest of virulent code includes, naturally, a Halloween virus as well as several other destructive programs and the fall's usual rogues' gallery [CW, Aug. 31].

New additions on the DOS virus list include **Violator B1**, a non-memory-resident parasitic virus that infects all .COM files, including COMMAND.COM. Although rare, Violator B1 can cause damage to data by reformatting Track 0 on all drives. Trigger dates are the fourth day of October, November and December.

Another virus joining the lineup is **Anarkia B**, a generic file infector variant of the well-known Jerusalem virus that infects .COM, .EXE, .SYS, .BIN, .PIF and overlay files and generally slows down the system.

Anarkia B activates on Oct. 12 after it becomes memory-resident and then deletes any programs the user attempts to execute.

Karin, or Redstar, is a rare nuisance virus that activates Oct. 23. It is a non-memory-resident infector of .COM programs, including COMMAND.COM. When an infected program is run, the virus displays the message, "Karin hat GEBERTSTAG," which roughly translates to "Karin's birthday." The system will then need to be rebooted to end the display.

If the COMMAND.COM is infected, the system boot may possibly fail.

Datacrime is a rare, destructive, non-memory-resident virus that attatches to the end of .COM files, increasing the file's length by 1,168 bytes.

The virus will continue to propagate until Oct. 12; then, when it is executed, it will display a message similar to "Datacrime Virus" or "Released: 1 March 1989." A low-level format of the hard disk follows.

Errors in the code will often make the system crash following infection.

There are several other strains of Datacrime that also activate Oct. 12, including Datacrime-B, Datacrime II and Datacrime IIB.

Halloween is a nuisance virus that infects .COM and .EXE files, including COMMAND.COM. Naturally, it is executed on Halloween. At that time, a 10K-byte file with a blank file name will be created in the current directory. The file contains pure virus code. The user will then receive the message "Runtime error 150 at 0000:0AC8."

Halloween-infected programs will experience slow program loads when an infected program is executed.

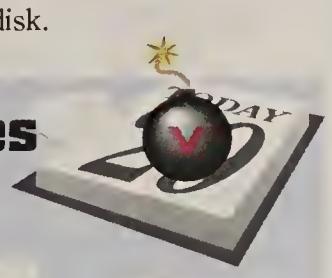
There are also two other viruses that can be activated on any day between Sept. 1 and the end of the year: **1554** and **1704**.

The 1554 strain is a memory-resident virus that infects .COM, .EXE and COMMAND.COM files and renders them inoperable.

The 1704 virus is a memory-resident .COM file infector that causes the infected file size to increase by 1,704 bytes. When activated, 1704 also reformats the hard disk.

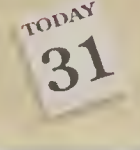
Unleashed viruses

A list of the viruses scheduled to strike during the month of October



October

All month: **Crew 2480, Mendoza, Cascade, Aircap B**
Each Monday: **Bad Guy 2, Exterminator**
Each Tuesday: **Demon, AH!**
Each Friday: **Alabama, Frere Jacques, Pay Day. Skism will hit the last three Fridays of the month.**
Every 10 days (Sept. 10, 20, 30): **Day 10**
Oct. 2: **Flip**
Oct. 4: **Violator B1**
Oct. 5: **Frog's Alley**
Oct. 8: **Taiwan**
Oct. 12: **Anarkia B**
Oct. 13: **Monxla, Anarkia**
Oct. 18: **Form 18, Skism**
Oct. 20-30: **Plastique**
Oct. 23: **Karin**
Oct. 24: **Form**
Oct. 25: **Skism**
Oct. 31: **Violator B1, Halloween**



Source: Fifth Generation Systems, Inc.

Microsoft sound card dressed to impress

BY CHRISTOPHER LINDQUIST
CW STAFF

Sound cards have been around for several years, but none of them have managed to make more than a dent in the corporate market. Microsoft Corp. is looking to change that. Its Windows Sound System is aimed squarely at the corporate user who wants a plug-and-play system to add sound capabilities to a personal computer.

The Sound System consists of both hardware and software. On the hardware side, users get a microphone, headphones and a card that fits into any available AT-bus slot in the PC. The card has connections for microphone and line inputs, such as a compact disc/read-only memory (CD-ROM) drive, as well as left- and right-channel line and headphone or speaker outputs. Users will not find any joystick or Musical Instrument Digital Interface ports on this card. Microsoft makes a point of saying the card is not intended for games or musicians.

The Setup program installs several software utilities, including the following:

•**Volume Control** (no more reaching behind the machine to adjust sound levels).

•**Recording Control**, through which you choose the active input channel and level.

•**Quick Recorder**, which allows users to record and embed sound annotation into documents.

•**Voice Pilot**, which provides voice recognition for control of applications.

•**ProofReader**, which audibly reads back spreadsheet information on Microsoft's Excel and Lotus Development Corp.'s 1-2-3 for Windows spreadsheets.

•**SoundFinder**, which can be used to browse through a variety of sound files.

It also includes SoundScapes, a "sound-based screen saver," Music Box 2.0, a CD-ROM control panel, a guided tour and a sound library with sample sounds.

Setup is quick and easy. A user starts the installation software before opening the machine, and the Setup program determines if the default base address of the card is acceptable. If not, it graphically shows the user how to set the only jumper on the card to a usable address.

Once the card is installed, the software determines available interrupts and direct memory access channels and configures the card automatically.

After setting up the card, the user can connect the microphone and speakers or headphones. Probably the quickest introduction to the system is the SoundFinder. With it, users can select multiple sound files to test. Icons and descriptions can also be attached to the sounds for easier identification. The Sound System can play sounds in a variety of formats, including those for the Next, Inc. family of computers and the Apple Computer, Inc. Macintosh.

The Quick Recorder allows users to easily create sound snippets that can be dragged and

Continued on page 42

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WINDOWS VIEW

Jesse Berst

Road warriors

It requires extra effort to take Microsoft's Windows on the road. Because Windows is so demanding of computer resources, a portable that's just fine for DOS-based computing may come up short if you try to use it with Windows. If your IS department supports users, managers, salespeople or executives who want Windows to go, you'll want to weigh the following six considerations in addition to normal buying criteria: power and hard disk size, pointing device, screen, file-transfer software, telecom software and fax software.

First, you'll need a more powerful machine. Don't try to get by with anything less than a system based on the Intel 386SX at 16 MHz. If your budget permits, you'll be much happier with a 486-based machine.

Second, you'll need more disk capacity. For space and cost reasons, most laptops max out at 60M or 80M bytes. At that size, you've got enough room for one or two serious Windows applications and a handful of Windows utilities. If you go beyond that, you'll probably need to use compression software.

Don't be scared off by compression software. It has been perfected to the point that Microsoft plans to incorporate it into DOS 6.0. This software compresses and decompresses data on the fly. You won't even notice much of a delay.

Windows users do, however, have to keep a small uncompressed area available for the Windows swap file. Just follow the manufacturer's directions. The best-selling product is Stacker from Stac Electronics in Carlsbad, Calif., but there are a half-dozen other compression solutions if you prefer.

Setting up Windows on a portable without solving the pointing device problem is, well, pointless. You just can't run Windows efficiently from the keyboard alone. Some travelers use an ordinary mouse. A mouse is fine if you typically transport your laptop from one desk to another, but if you have to work in planes or other confined areas, you'll need a more compact solution. Microsoft, Logitech and others manufacture clip-on trackballs that attach to the side of the laptop.

I find these clip-ons awkward and uncomfortable. My favorite portable pointer is Thumbelina, a tiny trackball that fits in the palm of your hand. Made by Appoint, Inc. in Pleasanton, Calif., Thumbelina is adequate for ordinary point-and-click operations and ideal for computer presentations, thanks to its long cord and small size.

The most elegant solution, however, is something built into the laptop. IBM's PS/2 Model CL57SX, for instance, has a built-in trackball, albeit in an odd location at the upper left. You can find other laptops with various solutions, ranging from trackballs to thumb-operated rollers to so-called "mouse keys." Be sure to try out these devices before buying — some people adapt readily, but others don't like them at all.

Monochrome is out

Next, turn your attention to the screen. Don't try to run Windows on a monochrome machine. You won't be able to distinguish icons or buttons. Look for a portable with a gray-scale screen. Sixteen shades of gray is sufficient. Sixty-four shades is a little nicer, although it's not really necessary.

Of course, the ultimate screen solution for Windows is a color LCD. Unfortunately, color portables are heavier and more expensive than their gray-scale counterparts. In fact, most of them are still so expensive that you can't justify them except for sales presentations and demos, where the excitement of color can mean the difference between getting the sale or not.

It's tempting to save a few dollars by opting for passive-matrix color. I've tested both passive- and active-matrix portables. Passive-matrix color is fine for personal work, where the washed-out colors don't make much difference. For sales presentations, however, you need the visibility and vibrance of active matrix.

So much for the hardware. On the software side, you also have special considerations. For file transfers from the laptop to the desktop, you may choose to simply shuttle floppies from the portable to the desktop machine.

If you want a Windows-based solution, you might try WinConnect from Traveling Software in Bothell, Wash. For a product that combines transfer software with a file manager and other utilities, check out Xtree for Windows from Executive Systems in San Luis Obispo, Calif.

Most road warriors need a telecommunications package, and here the news isn't great. There are at least a dozen Windows communication packages but none that I consider truly outstanding.

You're in better shape if you want to send faxes. There are several outstanding fax programs for Windows, including WinFax Pro from Delrina Technology in Toronto and the new UltraFax from Z-Soft in Marietta, Ga. One word of warning: Make sure to check that the fax software you're looking at supports your modem.

Berst is publisher of Redmond, Wash.-based "Windows Watcher" newsletter.

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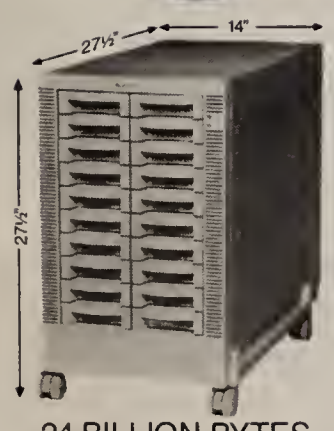

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Quattro Pro 4.0

Part of a series of articles on questions commonly asked of personal computer software vendor support groups. This week's column focuses on Borland International, Inc.'s Quattro Pro 4.0.

Q I have plenty of memory, but I still get "not enough memory to complete operation." Won't Quattro Pro use extended memory?

A Quattro Pro won't store spreadsheet information in extended memory. It stores spreadsheet information in expanded memory, or EMS. You can use an expanded memory manager such as QEMM or 386 to the max. You can even use EMM386.EXE, which comes with DOS 5.0. These programs will convert your extended memory to expanded memory.

Q I have an expanded memory manager and it helped some, but Quattro Pro gives me the "out of memory" message when I still have some memory left.

A Set/Options/Other/Expanded Memory to Both. That way, Quattro Pro 4 will store everything it can in memory.

Q How do I change the font in a header or footer?

A In Quattro Pro 4, the font used for headers and footers is Font 1 under /Style/fontTable. Change this font, and it will change the header and footer fonts. You may need to assign a different font to the rest of your document.

Q How do I get my headers and footers to print?

A Make sure that /Print/Layout/Break Pages is set to Yes. Quattro Pro won't print headers and footers at the top and bottom of pages if it isn't keeping track of where pages begin and end. If you are using a laser printer, make sure that the top and bottom margins are big enough to avoid the printer's nonprintable region.

Q My keystroke macros created in a previous version of Quattro Pro do not run properly in Quattro Pro Version 4.0.

A Select /Options/Startup/Use Dialogs/No. Also, select /Tools/Macros/Key Reader/Yes.

Q When I try to print on legal paper, Quattro Pro only prints on 8- by 11-in. paper.

A Be sure to change the page length to 14 inches in the /Print/Layout menu. Also, select the legal-size mode under /Options/Hardware/Printers/1st or 2nd Printer/<CR> (select the correct Make, Model and then legal-size mode).

Q How can I speed up printing on a Novell, Inc. network?

A In Quattro Pro 4.0, make sure the device for your default printer is set to Network Queue rather than a captured port.

Q I'm running on a network and receive the error message "Cannot Open Resource Library." How do I correct this?

A Each user's private directory must contain a set of MP and RF files. There should be no MP or RF files in the main program directory. Also, be sure the user's path statement contains both the user's private directory and the Quattro Pro program directory. The order is important in the path statement; the private directory should appear before the Quattro Pro directory.

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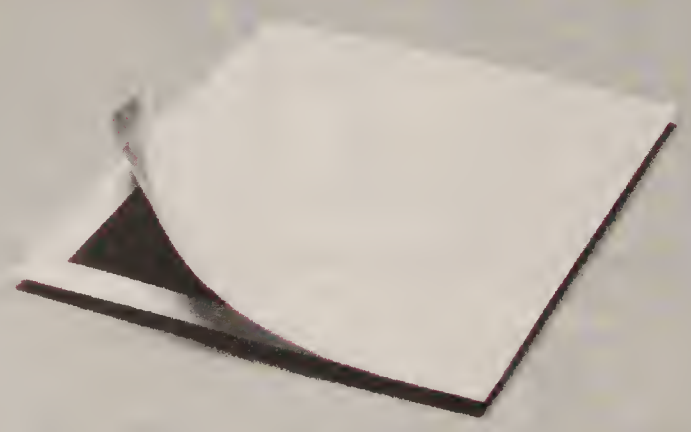

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IN BRIEF

Intel to close N.J. division

■ **Intel Corp.** will move its Princeton, N.J.-based Digital Video Interactive (DVI) Technical Operation to Chandler, Ariz., and close the Princeton facility during the next 12 months. The move is being made to better control costs and centralize Intel's DVI activities in one location, a spokeswoman said.

The move is expected to save Intel about $20 million a year in travel costs. Eighty percent of the 170 employees in Princeton will be offered transfer packages. The spokeswoman said the move will not affect projects that are under way and that no work has been canceled.

■ **Computer Associates International, Inc.** has bundled its CA-Textor word processing software with **Reference Software International**'s Grammatik 5 for Windows. The bundled package is available for $99 in a limited offer.

■ **IBM** said it has "enhanced" its OS/2 Developer Assistance Program. Developers can now join the program by calling (407) 982-6408 or via CompuServe after Oct. 18. IBM also announced it will ship a compact disc/read-only memory with beta-test versions of future OS/2 code and development tools.

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We've made it so easy for you to do business the way *you* want to that we call our service program EASE—*Evaluate, Adopt,* and *Standardize Easily.* Quite simply, the flexibility of EASE puts Borland way ahead of our competition—so that we can put you way ahead of yours.

Here are some of the EASE programs that you can choose to create the service solution that's right for you.

An inside look

The **Executive Briefing** program lets you discuss your unique needs with Borland executives who talk your language. It's an opportunity to get an inside look at Borland's software and service direction. Because the more you know, the better decisions you can make.

Each briefing is tailored to address how Borland's software and services solve *your* critical issues. Issues like corporate mission, enterprise-wide data sharing, client/server technology, expediting applications development, and increasing user productivity.

More time to evaluate

The **Corporate Acceptance Program (CAP)** lets you evaluate products well before they are released, without the burdensome requirements of *beta* testing. By giving you more time to evaluate, CAP keeps your technology decisions ahead of the competitive curve. You have time to budget

not know is how works with IS

for software further in advance. And you learn how emerging products will fit into your company's fast-changing information architecture.

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Installed in company	#1 dBASE #2 Paradox	#1 dBASE #2 Paradox	#1 Borland C++	#1 ObjectVision
Best technology	#1 dBASE	#1 dBASE	#1 Borland C++	#1 ObjectVision
Best price performance	#1 Paradox	#1 dBASE #2 Paradox	#1 Borland C++	#1 ObjectVision
Best service/support	#1 Paradox #2 dBASE	#1 dBASE #2 Paradox	#1 Borland C++	#1 ObjectVision
Best documentation	#1 Paradox #2 dBASE	#1 dBASE #2 Paradox	#1 Borland C++	#1 ObjectVision
Prefer to do business with	#1 Borland	#1 Borland	#1 Borland	#1 Borland
Plan to buy	#1 dBASE #2 Paradox	#1 dBASE #2 Paradox	#1 Borland C++	#1 ObjectVision

***ComputerWorld** readers rank Borland software best in categories important to IS.*

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COMPUTERWORLD.

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8:12 a.m., Thursday. News Editor Alan Alper and Assistant News Editor Patricia Keefe meet at the Framingham home office to review the hottest news that's come in during the week from all over the world.

1:58 p.m. Stories continue to pour in. Alper meets with top editors and production people to map out the 12 late-breaking news pages. Art Director Nancy Kowal presents ideas for visuals that will bring the news stories to life.

6:09 p.m. Tokyo Correspondent Lori Valigfa receives a hot tip on a new technical advance in active matrix displays for PC's. She calls her sources in Japan to check out the rumor.

10:37 p.m. Alper, Keefe, and staff finish editing the final stories, clean up the pizza boxes, soda cans and shut down for the night.

8:02 a.m., Friday. The *Computerworld* staff filters into headquarters for the final push. Finished layouts must be at the printer by the end of day to make the deadline.

10:32 a.m. Maryfran Johnson, Senior Editor, transmits a story from the IBM Scientific Computing Conference in Palm Springs. IBM has announced the details of a major advance in RISC-based processing.

12:48 p.m. Midwest Bureau Chief Ellis Booker puts the finishing touches on a story about the first user of NCR's new parallel high-end processing system.

5:37 p.m. Electronic transmission of the latest news in IS is complete. The current issue of *Computerworld* is on its way to you.

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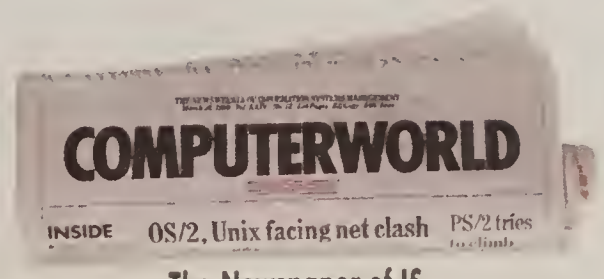


The Newspaper of IS

Keeping track of leased PCs

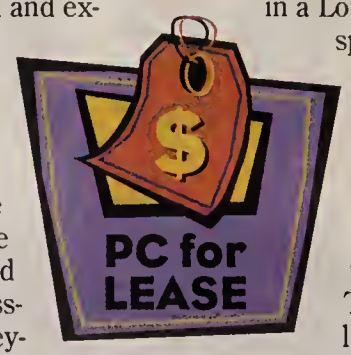
BY MICHAEL FITZGERALD
CW STAFF

MCGAW PARK, Ill. — At a large company such as Baxter Healthcare Corp., administering leased personal computers often leads to the heavy use of aspirin.

The headaches involved in tracking and handling leased PCs can turn into even more of a migraine than those that go with purchasing PCs because leased PCs have to be returned. Big leasing companies such as Comdisco, Inc. and Chrysler Systems Leasing, Inc. have created specialized electronic data interchange systems to help customers manage their leased PCs. Comdisco's Comdisco Lease Administration System Software, or CLASS system, the first in its field, was a significant factor in leading Baxter to lease notebook computers for one of its divisions, according to Maxcine Ashcraft, field automation coordinator at Baxter's hospital supply division.

"Our biggest concern was tracking," Ashcraft said, adding that the Comdisco on-line system allowed Baxter to easily change information it maintains on its 550 notebooks. She said Comdisco's willingness to change aspects of CLASS to suit Baxter's needs was also a factor.

Ashcraft built what she called a "catalog" for Baxter's leasing needs. The catalog contains the pertinent information on what Baxter leases with each notebook, including an expansion station and external monitor and keyboard. Baxter later added printers and 9.6K bit/sec. external modems to the catalog.



Today, Ashcraft said, she has her catalog set up so she can order a new notebook and its accessories simply by pressing one or two keys on her keyboard. She can then transfer the leasing information to an asset management module within CLASS.

"When I learned what I had to do in this position and then looked at CLASS, I saw it as my savior. I can't think of any other way I would've done it," said Ashcraft, who speculated that a clumsy operation setup in a Lotus Development Corp. 1-2-3 spreadsheet probably would have been her only other option.

Despite such strong words of praise, CLASS may become a thing of the past for Ashcraft's group, through no fault of its own. The primary reason Baxter leased notebooks rather than purchasing them was to stay abreast of technology. In late 1989, Baxter wanted to outfit the hospital supply division's field sales force with computers. It chose the first 386SX notebook, Compaq Computer Corp.'s LTE 386S/20.

"The Compaq LTE is a little outdated now," she said. Baxter's lease ends in late 1993, and it plans to begin reviewing a variety of notebooks early in 1993 to see whether notebook technology has developed to the point where purchasing will work better than leasing.

Choose accessories that keep pace with the fast HP LaserJet IIISi printer.

With the17-page-per-minute *HP LaserJet IIISi printer*, it takes less time to print a page than to walk over and take it out of the printer. It's perfect for shared or networked environments.

Now you can add accessories designed to make your high-capacity printing solution even more productive. The new 1,500-sheet *HP paper feeder* lets your HP LaserJet IIISi printer and the people using it get more done between refills. And switch between paper trays without getting up.

Your company will save even more time by keeping paper, toner cartridges, and other supplies in one convenient location—underneath the printer. The *HP LaserJet printer cabinet* is roomy on the inside, compact on the outside. It was custom designed to match the footprint of the HP LaserJet IIISi printer with an HP paper feeder. Exactly.

Get your company's high-capacity printing solution off to a flying start. See your authorized HP reseller or contact your HP sales representative about the HP LaserJet IIISi printer and custom accessories. For more information call 1-800-752-0900, ext. 7009.

Enhance the high-capacity HP LaserJet IIISi printing solution with the HP C2921A paper feeder, and the HP C2917A LaserJet printer cabinet.

HEWLETT PACKARD

Sound card impressive

CONTINUED FROM PAGE 37

dropped into documents such as spreadsheets that support Object Linking and Embedding. After activating the Quick Recorder, a user can speak into the microphone to create a voice annotation to the document. Quick Recorder's editing tools allow you to perform actions such as speeding up and slowing down the sound as well as cutting and pasting segments. The sampling rate of the recording can also be selected; lower rates provide lower-quality sound but also use less disk space.

One of the more useful pieces of software is the ProofReader. ProofReader installs itself as a menu item in Excel or Lotus 1-2-3 for Windows and allows data to be read back to the user either as it is entered or by selecting a range. A user-definable dictionary lets the data entry person enter new words. It is very helpful to hear what you are entering as you type in numbers from a hard-copy list, for example.

Probably the most entertaining — and potentially the most useful — piece of software is the Voice Pilot, which allows you to control Windows applications through voice recognition. Voice Pilot comes with predefined vocabularies for some 15 applications, such as Excel and Lotus 1-2-3 for Windows, but users can create their own "voice macros" and apply them to any Windows program.

For example, I wrote a simple macro that allows me to call a remote system, read my mail and log off, all without touching the keyboard or mouse. Some tasks get tedious, such as saying "left," "right," "up" and "down" over and over to select menu items, but shortcut words can be written for common items. Whether the people sitting near users' cubicles will want to hear them talking to their computer all day is an issue worthy of discussion.

In all, the Windows Sound System may be just what the industry needs to audition multimedia at many businesses that may have considered it more of a toy than a tool.

The Windows Sound System is scheduled to be available early next month for a list price of $289.

DIGITAL UPDATE
THE OPEN ADVANTAGE
SEPTEMBER 1992

IT'S SMOOTH SAILING ALL THE WAY TO Alpha

With the Digital Fleet of Application Reengineering and Migration (ARAM) Services

From start to finish, your migration to Alpha is made easier with Digital's Application Reengineering and Migration (ARAM) Services — a logical, step-by-step approach to implementing an open applications environment.

When planning your migration, begin by using our comprehensive porting and conversion services. Then, plan for longer-term strategic reengineering by taking advantage of Digital's COHESION solutions — a complete set of integrated capabilities for new and existing application development.

Here, in the first of an ongoing series on Digital's ARAM Services, we'll focus on our Migration Services offerings — specifically those aspects that position you to take maximum advantage of COHESION.

What ARAM Services Can Do for You

Today, changes in hardware technology are inevitable. Processors utilizing the latest technology have obvious benefits for maximum software performance. But overall, it's the migration of existing applications to the new platform that prompts concern.

Having assembled a software application portfolio over a number of years, an IS or engineering manager has a daunting task — and a lot of questions. Which applications should be moved? In what order? What kinds of special tools are needed? How will the staff react?

To help answer these questions and implement migration, Digital provides a full range of Application Reengineering and Migration Services that are available in several options, featuring:

- Assessment of the existing applications portfolio to discover improvement opportunities.
- Migration and optimization of applications to Alpha platforms.
- Preparation of the existing software for "forward engineering" to the COHESION environment.
- Business process reengineering and the utilization of IS as the enabling support for the resulting changes.
- Reuse and redesign of systems to take advantage of client/server, distributed environments.

Application Migration Centers (AMCs) Make Migration Easy

Your immediate questions are: How do I prepare today to migrate to Alpha? How difficult will this migration be? Digital answers your questions by providing you with migration services that make the process easy and efficient.

> We can keep you on the right course with a wide range of reengineering and migration support services. Utilizing Digital's COHESION solutions as key elements in your reengineering efforts, our ARAM services help you plan for and implement the move to Alpha platforms.

We have Application Migration Centers (AMCs) in place across the U.S. that help you facilitate the planning process, that provide implementation help, and that continue to support you with longer-term application reengineering needs. Specifically, AMCs offer you:

- Migration Assessment Consulting Services
- Application Porting Services
- Comprehensive Alpha Training.

One, two, or all three offerings can be tailored to fit your business environment. From do-it-yourself support, to medium-level shared support, to providing for your total support requirements — AMC services are flexible according to your needs and your budget.

The centers have already provided substantial support for the porting of a great number of independent vendor software packages. These successes — along with the ability of AMCs to move portable code and provide easy-to-use porting tools and enabling software — secure for you an easy and successful migration.

Migration Assessment Consulting Services

AMCs can deliver Alpha Migration Assessment Consulting Services for OpenVMS and OSF/1 today. These services cover the development of an integration and migration strategy along with conversion and porting software. Assistance is also provided in migrating to an open systems environment.

Specifically, the assessment consultancy can offer you:

- A better understanding of potential benefits and impacts of Alpha via a thorough assessment of your application environment.
- Increased awareness of potential issues (if any) around your migration along with the size of the effort required. This knowledge will help facilitate overall planning and staffing.
- An understanding of the activities needed for the implementation — and the milestones associated with them.

The assessment process is conducted in phases in order to give you the kind of detailed information necessary for your migration. Plus, this approach is flexible enough to accommodate a variety of application environments.

Porting Service Package

Digital offers a variety of porting service alternatives to meet a range of business requirements. The Porting Service Package — a set of software migration tools, training, documentation, and remote support — allows you to work either in your VAX VMS or in your MIPS ULTRIX environment to recompile, relink, and translate your applications to Alpha. What's more, these packages have already proven their success through a great number of third-party porting experiences.

Comprehensive Alpha Training

To provide you with the understanding, knowledge, and skills to successfully implement and optimize your new Alpha systems, a full breadth of training courses has been developed. Courses include Alpha VMS Migration, Alpha OSF Migration, and Alpha Technical Overview.

Expertise You Can Count On

With today's rapid changes in technology environments, you're looking for state-of-the-art products and comprehensive services. Digital — a full-service provider of reengineering solutions, including a comprehensive set of Alpha porting and conversion tools — has what you're looking for.

We offer you the complete solution — Alpha hardware, the COHESION software development environment, and ARAM Services. This is the kind of total approach that will chart your course toward open applications, keeping you competitive in the '90s and beyond.

For more information and a FREE initial on-site assessment through our regional Application Migration Centers, call 800-DEC-INFO (800-332-4636), ext. MIGRATION.

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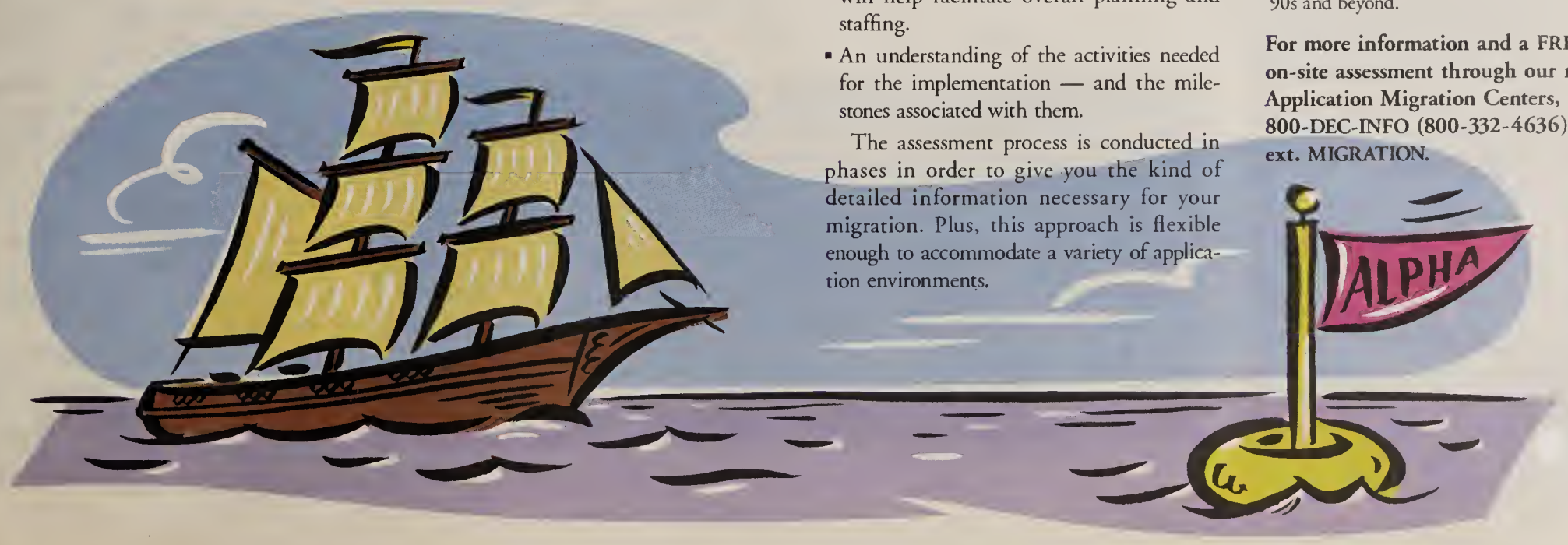
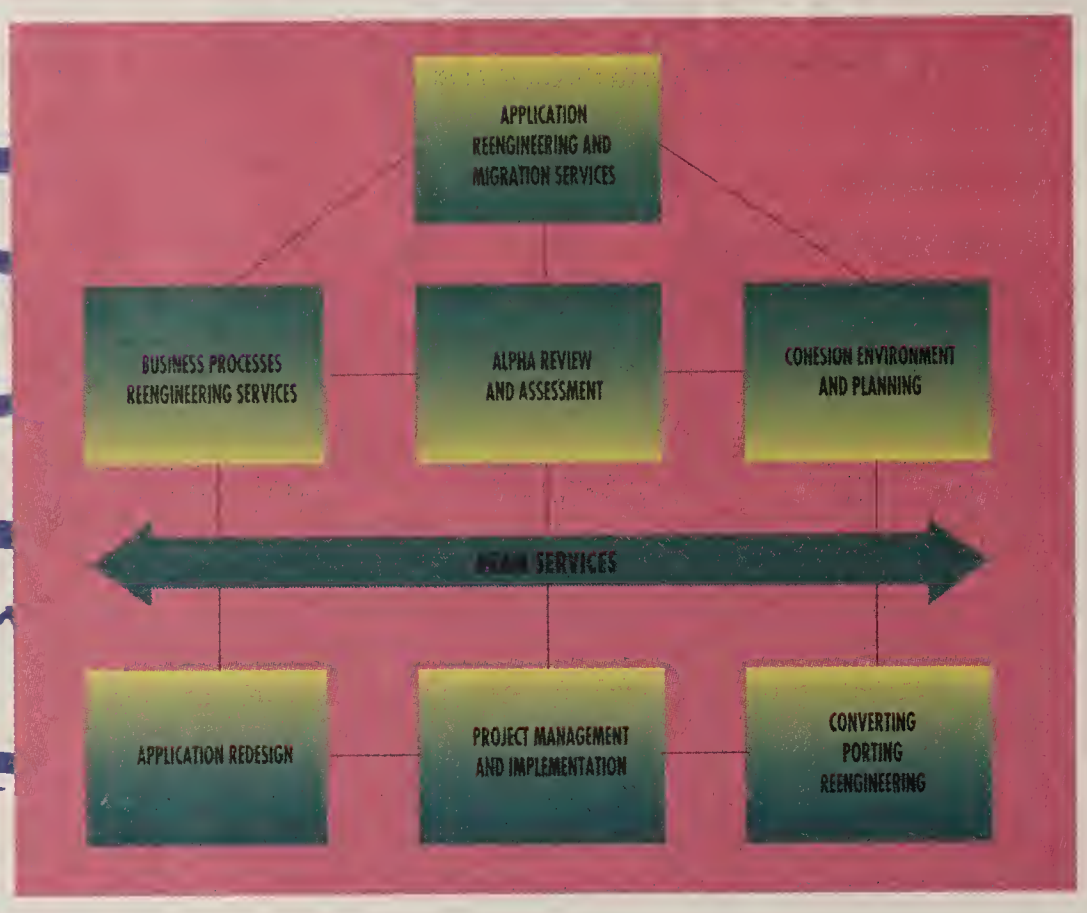


digital™

A PATH TO OPEN APPLICATIONS



Digital's Application Reengineering and Migration Services offerings are both modular and flexible — providing the assistance you need in planning for and implementing your move to RISC-based Alpha platforms.

Need *FASTER* Applications? Get *FASTER* Memory

The MS7AA series of Alpha-ready memory options — the fastest, highest-capacity memory from Digital to date — unleashes the full performance potential of today's VAX 7000 and VAX 10000, along with tomorrow's Alpha systems.

The MS7AA series' innovative use of PCB layout and packaging technologies provides 512 MB in a single module and sustained bandwidths of up to 640 MB/s due to interleaving and 70 nanosecond parts. These features highlight the fact that crisp, responsive performance isn't a matter of MIPS alone but of sufficient memory capacity and bandwidth for a variety of application needs.

ENGINEERING TRUTH #1:
Whether it runs at 10 SPECmarks or 100, your CPU's performance still depends on your memory system's ability to keep up with it.

More Memory, More Performance

Under-resourced applications page and swap more frequently and take longer to execute tasks — delaying your applications and your progress. The payoff of configuring and maintaining the right amount of memory is higher productivity — from applications and from people. To that end, MS7AA memory options provide a generous 3.5 GB capacity — a welcome feature for database management, CAD, and other applications that are memory constrained (512 MB of memory is currently supported under OpenVMS V5.4). Our engineering staff recommends the following as a baseline for VAX 7000 and 10000 systems:

- One CPU — 128 to 256 MB
- Two CPUs — 256 to 384 MB
- Three CPUs — 384 to 512 MB
- Four CPUs — 512 MB.

Note: Ask your Digital sales representative to help you factor in current and projected application demands to arrive at your own needs.

Interleaving: Automatic, Fast, and Free

Another key MS7AA feature, interleaving is the method of accelerating data transfers by providing access to multiple memory banks simultaneously. MS7AA memory modules are designed in groups of DRAMs, or banks, each with its own controller so it can operate independently.

With one bank of memory, the CPU must wait for each transaction to be processed and returned on the system bus before it issues another command. With multiple memory banks, the CPU can interleave operations among them, issuing parallel commands and keeping data moving at full speed on the system bus — ultimately accomplishing two to three times the workload.

It Pays to Interleave

Because interleaving is designed into every MS7AA module, all you need for maximum benefit is the right memory configuration — one with multiple banks of memory, evenly matched. To see what interleaving can do for you, consider the following MS7AA configurations:

Configuration	Memory Bandwidth
VAX 7000, 10000, or Alpha with one 64 MB module (1 memory bank)	215 MB/s
VAX 7000, 10000, or Alpha with one 128 MB module (2 memory banks on 1 board)	425 MB/s
VAX 7000, 10000, or Alpha with two 128 MB modules (4 memory banks on 2 boards)	640 MB/s

If you're not using interleaving now, a two-way interleaving scheme can double your efficiency, and a four-way interleaving scheme can triple it. What's more, the VAX or Alpha system console firmware automatically senses the memory options configured — and interleaves them for maximum performance.

PARTNER SHIPS

Digital and MTI Systems

A Total Approach That's GOOD for Business

MTI Systems, a division of Arrow Electronics, Inc., became an Authorized Digital Distributor (ADD) in 1976. Sixteen years later, the term "distributor" doesn't begin to encompass the range of tightly integrated computer systems and software applications, technical services, and complete support that MTI offers today's Fortune 1000 businesses.

"MTI has always led the way in the evolution process of distribution. We've always been first in terms of the increased offerings provided by a Digital distributor," says Bob McInerney, MTI Systems President. "We were the first to incorporate a technical sales force and the first to have on-site technical resources."

McInerney explains that MTI has evolved to fill changing business needs. "To flourish in the '90s and beyond, companies have begun to rely not only on a distributor's technical expertise, but on its business expertise as well — its ability to analyze a business problem and enhance mission-critical applications already in place," he says. "MTI designs applications that meet a company's critical needs today and that provide growth for the future."

Wide Range of Expertise, Plus Personalized Service

A provider of traditional VAX system support services, MTI offers expertise in a wide range of areas, including:

- Systems integration
- Hardware integration
- Local and wide area network support
- On-site consulting
- System and network design and management
- Custom desktop integration.

What's more, MTI offers customized solutions in areas such as process and discrete manufacturing, human resources, and finance. ▶

Key to the organization are dedicated sales specialists and technical engineers, who provide personal service from the pre-sale through the post-sale process. In fact, it's this kind of unique project management approach that sets MTI apart from other distributors. Says McInerney, "Clients view us not as a vendor but as a partner, who is there to help them every step of the way."

Along with expertise and dedicated personnel comes personalized service. With eight technical sales offices, MTI can offer local rather than centralized resources. The result? Individualized attention for more efficient and effective computing solutions.

MTI Partners with the Best

To date, MTI has provided Digital solutions to banking and financial institutions, hospitals and health care industries, manufacturing, nonprofit corporations, and a variety of other corporate computing environments. Through its partnership with Digital, plus partnerships with leading software vendors, MTI is able to offer a total computing solution to clients.

For example, Digital, MTI, and Excalibur recently collaborated in configuring a complex application for a large southeastern U.S. corporation. The company needs to place all its paper files online so that any one document can be accessed from any terminal. Toss in the fact that the company is utilizing a large IBM mainframe plus Novell-based PCs.

More than a distributor. More than a systems integrator.

MTI Systems offers total, customized computing and networking solutions.

"In this case, a successful outcome takes more than just an understanding of the software," says McInerney. "A VAX system will play host for all of these documents. Therefore, you have to deal with all of the connectivity issues as well. MTI does that."

Strong Backing from Arrow

As a division of Arrow Electronics, Inc., a $1.9 billion electronics distributor, MTI is able to provide its clients with specialized programs and services. These include:

- An online inventory management system, offering instant information on product availability, location, and delivery
- A portfolio of 13 individual financial programs
- A Customized Order Program, whereby technicians configure and load major operating systems, such as UNIX, MS-DOS, OS/2, and VMS, as well as specific applications software.

MTI's single objective is to provide effective, dependable computing solutions to its clients — solutions that will certainly help businesses to excel in the '90s and beyond.

For more information on MTI Systems, call MTI at 800-645-6530.

PROGRESS AND VMS
A Winning Combination

Bring Digital's highly flexible VMS operating system together with PROGRESS software and what do you get? A heterogeneous computing environment where the network acts as the system — and where applications and their supporting platforms reside transparently.

The PROGRESS Application Development Environment is an integrated environment that comprises a 4GL, a relational database management system (RDBMS), and associated development tools. The PROGRESS environment also brings more than 2,000 layered value-added reseller application packages to the table — each capable of being deployed in a client/server environment and each completely customizable.

Simply stated, with PROGRESS, your application of choice can be platform-independent — letting you utilize the best Digital system for your specific organizational function.

The VAX VMS environment offers the open standards necessary to integrate with any other platform that adopts industry-accepted interface standards. VMS also offers a combination of "high-integrity" and "open system" benefits, such as:

- Availability
- Reliability
- Security
- Production systems support
- Interoperability
- Portability
- Consistent user interface.

"In evaluating which hardware and software platform to use, we chose VAX VMS because we needed a rich, robust environment. We also wanted to make sure our investment was protected. Using PROGRESS on VAX VMS opened up even more opportunities for us. PROGRESS really is a complete 4GL language."

Albert Huff
Director of Information Services
Washington School of
Information Processing Cooperative

What's more, VMS acts as a "bridge" from one generation of hardware technology to the next, and between systems from various vendors — protecting your investment in application, training, and systems.

The Digital/Progress team brings power, simplicity, and sophistication to the desktop — a combination that lets you simply utilize a flexible, open environment, or have this environment support as technical an application as you care to build.

For more information on the Digital/Progress solution, call Progress Software Inside Sales at 800-4PROGRESS (800-477-6473).

NEWS FLASH

Digital-Assisted Service Program Lets You Tailor Your Support

We provide you with just the right level of support for your computing equipment, whether you need a little or a lot, through our Digital-Assisted Service Program (DASP). DASP complements your own self-maintenance program by assisting you with on-site repair, access to training available only to Digital service engineers, and more — when you need it.

As our premier offering for those who choose to participate in the maintenance of their equipment from Digital and other vendors, a DASP service agreement can provide you with:

- Discounts and allowances on spares and training
- Guaranteed 4-hour, on-site response at a fixed, per-hour rate
- Field Change Orders to keep equipment current
- Diagnostics to assist self-maintenance efforts
- Board replacement through DECmailer Plus and Factory Express for fast access to Digital's large menu of Digital and multivendor parts.

For more information on DASP, call 800-225-5385.

FREE Printer Driver Diskettes for Microsoft Windows Offered

You can get a comprehensive printer driver diskette for Microsoft Windows, versions 3.0 and 3.1 — free from Digital. The printer driver diskette is available for our current portfolio of printers, including the DECmultiJET 1000 and DECmultiJET 2000 ink jet printers. (See next page for more details on DECmultiJET printers.)

This free software diskette supports our dot matrix, laser, ink jet, and color thermal printers, and is available for 3½-inch (1.44 MB) and 5¼-inch (1.2 MB) drives.

Order Information

3½-inch Printer Driver Diskette
#FW-207-S1-AK

5¼-inch Printer Driver Diskette
#FW-208-S1-BK

To get your FREE printer driver diskette, call 800-DIGITAL (800-344-4825) and press 1.

digital™ SEPTEMBER 1992

TERMINAL technology

Have You Heard the Latest?

Digital's new VXT 2000 family of Window Terminals provides productivity gains without impacting host, network, or application.

The ELT320 Designed for Performance

Digital and Planar Systems, Inc. have joined forces to provide text terminal users with the ELT320 — a state-of-the-art electroluminescent (EL) flat panel display. Manufactured by Planar Systems and weighing only 4.5 pounds, the ELT320 is ideal for applications where space is at a premium, such as hospitals, critical care facilities, trading floors, point-of-sale locations, and laboratories. ELT320 performance features include:

- User-definable keyboard setup
- Six local memory pages
- Local editing
- Built-in diagnostics
- Low ELF emissions
- Communication speeds up to 38.4 K baud
- Auxiliary RS-232-C serial port.

Utilizing bright EL technology, the ELT320 terminal comes with a binder-thin display and provides crisp, flicker-free images that are easy on the eyes and readable over a wide viewing angle. In addition, the terminal comes with adjustable arms for ergonomic positioning at eye level.

All in all, the design and performance features of the ELT320 can improve system performance and enhance user productivity. What's more, the ELT320 is compatible with Digital's VT320, but uses just one-tenth the volume of this conventional Digital terminal.

For more information on the Planar ELT320 flat panel terminal, call 800-DIGITAL (800-344-4825), press 2, and reference ext. 65G.

The Planar ELT320

Digital's X Window Terminals Designed for Productivity

If you're a terminal user in a large or medium-sized firm looking to enhance productivity for administrative tasks, look here. Digital's new VXT 2000 family of Window Terminals, operating in server mode, provides higher productivity gains than in the past — without any significant host, network, or application impact.

These server mode terminals offer a host of benefits when used for administrative functions, including:

- No application modifications
- Improved productivity and effectiveness for systems managers and users
- Easy installation on existing networks
- Remote system management
- Reduced cost of ownership.

Digital's VXT 2000

By installing the server-based VXT 2000 family of Window Terminals, telemarketing and customer service managers can be assured that users aren't taxing the host for booting, overloading the host memory, or overloading the network itself. In fact, Digital has conducted performance characterization studies that show a 50 percent or greater reduction in both network and host loading as compared to other X Window terminal approaches. What's more, a single system manager can manage hundreds or thousands of VXT 2000 Window Terminals from one office.

Plus, server-based functionality efficiently centralizes administrative management functions — allowing you to spend less time on system management functions and more time on the business at hand.

For more information on Digital's VXT 2000 family of Window Terminals, call 800-DIGITAL (800-344-4825), press 2, and reference ext. 65H.

A FREE DECmultiJET Ink Jet PC Demo *Is a Phone Call Away*

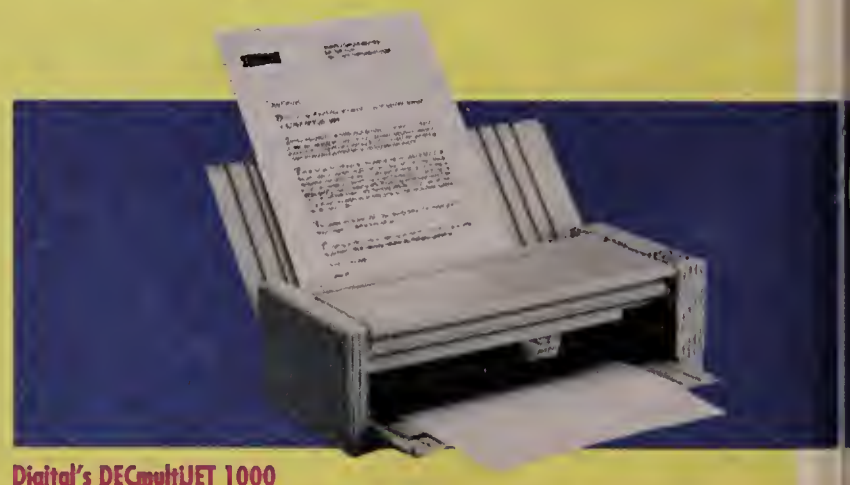
Digital has great news for PC users. For the first time, we're offering a special demo floppy (3½ inches) that gives complete details on our high-quality, black-and-white ink jet desktop printing solutions. This animated, online presentation will explain the features, benefits, and functionality of Digital's DECmultiJET 1000 and DECmultiJET 2000 family of ink jet printers — formerly our DECjet line of printers.

Both models are compatible with industry-standard PCs and have the ability to print labels, transparencies, and plain paper. Add laser-like quality and efficient paper handling — and its no surprise that in a recent issue of *PC Week Buyer's Guide* the DECmultiJET 1000 was compared favorably to nearly a dozen other models. In fact, its speed and functionality were among the highest listed, and its price was one of the lowest. (Comparisons made among portable printers under 11 pounds.)

To get your FREE DECmultiJET demo floppy, be among the first 100 people to call 800-DIGITAL (800-344-4825), press 2, and reference ext. 65F.

Product	Order #	Price
DECmultiJET 1000	FR-LJ16P-AA/CDC	$329
DECmultiJET 2000	FR-LJ36P-AA/CDC	$539

To order DECmultiJET 1000 or 2000 printers, call 800-PC-BY-DEC (800-722-9332).



Digital's DECmultiJET 1000

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NEW PRODUCTS

Fax

ZSoft Corp. has introduced UltraFax, a Microsoft Corp. Windows-based program for managing fax communications.

The product features document management, image enhancement, data file transfer and optical character recognition. A full-featured editor is included along with a multiple document viewer and a document manager. According to the company, with automatic data field insertion, users can create custom cover pages from any Windows application.

UltraFax costs $119.

ZSoft
Suite 100
450 Franklin Road
Marietta, Ga. 30067
(404) 428-0008

Peripherals

Calcomp, Inc. has introduced the CCL 600, an 11- by 17-in. monochrome laser printer.

The CCL 600 has 600 by 600 dot/in. true engine resolution and supports 8.5-in. and tabloid-size media. Resolution can be switched to 300 by 300 dot/in., and the product prints on both plain paper and transparency film. Through Microsoft Corp.'s TrueImage, the CCL 600 becomes Adobe Systems, Inc. PostScript language-compatible and has native TrueType fonts to support Microsoft's Windows and Apple Computer, Inc.'s Macintosh System 7.0.

The CCL 600 costs $4,495.

Calcomp
2411 West La Palma Ave.
Anaheim, Calif. 92801
(714) 821-2000

RasterOps Corp. has introduced PaintBoard PC, a true-color accelerated display adapter.

PaintBoard PC was designed for the Microsoft Corp. Windows environment and provides high-resolution, 24-bit color in a single-slot solution, the company reported. The product has three graphics processors and supplies support for a variety of resolutions — up to 1,024 by 768 in noninterlaced mode.

The PaintBoard PC adapter costs $1,299.

RasterOps
2500 Walsh Ave.
Santa Clara, Calif. 95051
(408) 562-4200

QMS, Inc. has introduced the ColorScript 210 and ColorScript 230, two color print systems.

According to the company, these terminal printers have controllers that include an Intel Corp. 80960CA reduced instruction set computing processor operating at 25 MHz. Features include the QMS Simultaneous Interface Operation and Emulation Sensing Processor technology, Context Switching, job spooling and automatic error recovery.

The ColorScript 210 costs $4,995, and the ColorScript 230 costs $7,995.

QMS
1 Magnum Pass
Mobile, Ala. 36689
(205) 639-4400

Software application packages

DeLorme Mapping has introduced MapExpert.

MapExpert is a compact disc/read-only memory product that provides a map database of the U.S. for locating, viewing, customizing and printing an unlimited variety of maps, the company reported. MapExpert runs on Microsoft Corp. Windows-based personal computers. Users can preview and print high-quality color or black-and-white maps on any Windows-supported printer. Tools for personalizing, annotating, updating and highlighting maps are included.

The product costs $495.

DeLorme Mapping
Lower Main St.
Freeport, Maine 04032
(207) 865-4171

Best Programs, Inc. has introduced the FAS1000, a fixed asset management software program.

FAS1000 features include seven depreciation schedules, automatic book defaults and the ability to calculate more than 20 methods of depreciation. It includes more than 20 standard reports with user-defined sort-and-range criteria for each asset tracking range.

According to the company, the product has a state-of-the-art relational database structure and can import information directly from a Lotus Development Corp. spreadsheet. FAS1000 runs on IBM AT, Personal System/2 or compatibles.

FAS1000 costs $795.

Best Programs
11413 Isaac Newton Square
Reston, Va. 22090
(703) 709-5200

COMPUTERWORLD
CAREERS ON-LINE
508 879-4700
with your computer/modem

Proof that Okidata's newest printer will get you through thick and thin.

Frankly, we don't expect people who buy our new Pacemark 3410 to print on aluminum the thickness of a beverage can.

But our demonstration tells you a lot about how rugged Okidata's new dot matrix printer is – and how well it'll handle your heavy-duty printing load.

Sharp, clear 8-part forms, for example, are no problem for a printhead that can handle metal sheets. And continuous duty back-room data processing chores are a natural for a machine so reliable, it's been rated at 8000 hours MTBF.

But the all-new Pacemark 3410 has more than muscle on its spec sheet: speeds up to 550 CPS, built-in bar code fonts, and a full range of paper-handling options (top, bottom, and rear feed; labels, envelopes, heavy card stock, etc.).

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Okidata is a Reg. T.M. and Okidata OK! is a T.M. of OKI Electric Industry Co., LTD. "We don't just design it to work. We design it to work wonders." is a Reg. T.M. of OKI America, Inc. Actual printout on PM3410 on sheet of 006 inch aluminum.

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IN BRIEF

Solbourne shuffle

■ **Solbourne Computer, Inc.** named Carl Herrmann president and chief executive officer. It also named Herrmann and Geoffrey A. Moore to its board. Herrmann joined the Longmont, Colo.-based workstation maker in July 1991 as vice president of international operations; he had been acting president since April.

■ **Microsoft Corp.** has released WinLogin, a tool intended to help administrators manage Windows configurations on networked personal computers. WinLogin allows users to store and retrieve their personal Windows configurations from any PC on the network. When a user logs on with his user name, the configuration is automatically retrieved from a central database. WinLogin has a suggested list price of $29.95.

■ **New Jersey Bell**'s installation and maintenance groups will use **NCR Corp.** mobile computers, departmental database servers and scalable multiprocessors under a $3.3 million contract announced recently.

Continued on page 55

GIS helps clean up in Andrew's wake

Donated software generates daily maps that track a variety of hurricane relief operations

BY MARYFRAN JOHNSON
CW STAFF

MIAMI — After Hurricane Andrew's destructive sweep through Southern Florida stripped miles of streets of their names, a local software company helped get federal relief efforts on track with a geographic information system (GIS) that now plays a crucial role in the cleanup operation.

The week after Andrew struck, Digital Matrix Services, Inc. volunteered its expertise in GIS mapping using its InfoCAD software.

"We felt the storm in our own backyards. There were people in our company who lost their homes, so we wanted to help in some way," said Juan DeAngulo, vice president of U.S. sales at Digital Matrix. Several phone calls to Washington, D.C., put Digital Matrix in touch with Federal Emergency Management Agency (FEMA) officials, who welcomed the help.

FEMA artery

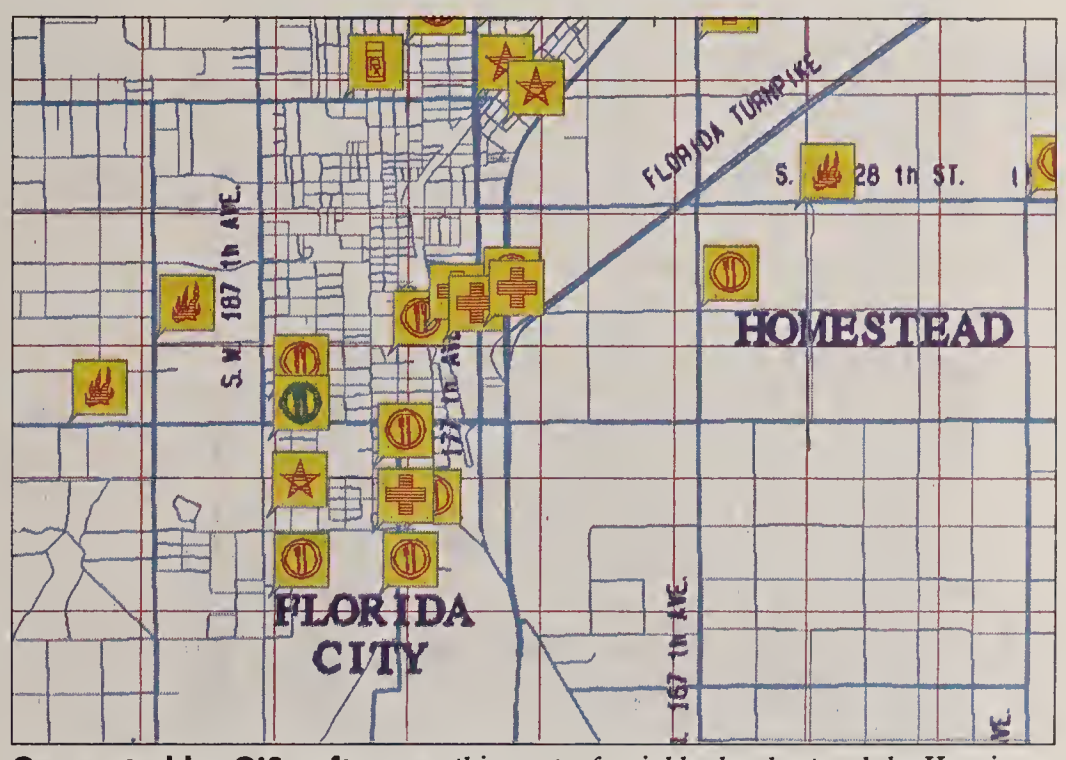
Equipped with a recent set of digitized maps covering the entire South Dade County area, the software vendor set up shop at the heart of FEMA operations in the abandoned Eastern Airlines offices at Miami International Airport.

Digital Matrix runs its software on a variety of Unix systems, but its main platform is Hewlett-Packard Co. Apollo 9000 Series 700 workstations. InfoCAD is a full-function GIS with capabilities for database searching, imaging, plotting, spatial analysis, routing, geocoding and other design functions.

"The first thing the FEMA people needed was good data such as street location information," DeAngulo said.

At FEMA's request, Digital Matrix began expanding the content of the digitized maps by scanning in geodetic survey maps and more than 100 aerial photos from the U.S. Army Corps of engineers. Also included were latitude and longitude coordinates so that helicopters making supply drops could find their way around.

The result was a highly consolidated map for coordinating services to the stricken areas.



Generated by GIS software, *this map of neighborhoods struck by Hurricane Andrew is updated daily to help coordinate federal relief efforts*

Every day at 8 a.m., FEMA issues a freshly updated map that is overlaid with locations for health stations, trash burn sites, Red Cross operations, tent cities, kitchens and other services. Most recently, Dade County GIS data and map information was added to the system.

This effort is believed to be the first time FEMA has relied so heavily on a GIS to organize and manage emergency relief.

Voluntary power

The HP Apollo 9000 Model 710 workstation originally running the InfoCAD package was swiftly overwhelmed by the intensified data flow. So HP volunteered and sent along its top-of-the-line Model 750, three X Window System terminals, an HP PaintJet XL300 for high-resolution printing and an HP ScanJet IIC for scanning aerial photos into the digitized maps.

"Our pen plotter was also not good enough for the task, not because of the quality but [because of] the time a map took to do," DeAngulo said. So the company hauled in an electrostatic plotter from Calcomp's plotter division in Anaheim, Calif. "Now we can plot one complete map of the area in five minutes," he noted.

"There is a constant effort going on to update the charts and maps," said Ron Kessinger, an HP sales representative in Miami.

"Army people were in here the other day and needed latitude/longitude information on where to put the port-a-potties. That was kind of a high-tech use for a real low technology!"

Integration needs grow as banks merge

BY THOMAS HOFFMAN
CW STAFF

NEW YORK — Combining the operations and information systems of two major banks — one with assets of $70 billion and one with assets of $65 billion — is no easy project. Just ask Frank Sisto.

Sisto, vice president of retail banking systems at Chemical Banking Corp., is overseeing the retail banking systems development portion of the merger of Chemical and Manufacturers Hanover Trust Co. The merger may have been "officially" completed on Dec. 31, 1991, but Sisto said Chemical and Manufacturers Hanover still have 43 retail banking software integration projects to complete.

To streamline the systems consolidation between the two banks, Chemical has relied on project management software from Applied Business Technology Corp. in New York. Chemical used Applied Business' Project Workbench Release 3.05, a personal computer-based project management program that runs under DOS.

According to Sisto, Chemical's 43 project managers use Project Workbench to do their weekly progress reports on the retail banking systems projects. In addition, the project management software is used to coordinate the related activities of 340 systems professionals.

Reports written by the project managers are routed over a Novell, Inc. NetWare-based network to a Symantec Corp. Q&A database, which houses information on the projects. Project managers and their supervisors evaluate timetables for project activities, which tasks are being conducted and the deadlines that have to be met for all projects.

Use of the software is critical to maintaining the resources required for the projects, Sisto said.

By using Project Workbench, project managers are able to synchronize the deadlines for each task, he added. For example, a project manager replacing systems software in the data center must be cognizant of how these changes will affect branch automation.

David Green, a Chemical consultant, said Project Workbench has benefited Chemical in three major areas. First, Green said, the software has helped each project manager plan the "delivery schedule" for each task. The software has also enabled Chemical to accurately track the progress of the more than 12,000 tasks required to complete the 43 projects. In addition, it helps project managers communicate their needs to one another.

ON SITE

CHEMICAL

Chemical Bank
New York

- **Challenge:** To manage the software development process during merger between Chemical Bank and Manufacturers Hanover.
- **Technology:** Applied Business Technology's Project Workbench project management software.
- **Results:** Met every deadline for each of seven major retail systems projects completed since late 1991.

Chemical has used Project Workbench in various ways since 1982. Green said it has worked particularly well in systems merger projects in part because of its comparative strength in managing human resource elements.

Sisto said the project management software helped Chemical meet every deadline for seven retail banking projects completed since late last year. He said use of the software, paired with strong management backing, helped support implementation of sound project management practices.

Moving made easy

Looking back at some of the activities Project Workbench has helped support, Sisto noted how the bank moved its data center from Manhattan to Wilmington, Del., over a single weekend in July. Using Project Workbench to coordinate the six months of planning, the bank was able to move its data files, switch its networks and have the data center running within 24 hours.

A month before Chemical moved its data center, the bank had already moved the former Manufacturers Hanover's NCR Corp.-based applications from its last branch and ported them to an IBM Enterprise System/9000 Model 900 mainframe.

Chemical will begin using a Microsoft Corp. Windows version of Applied Business' Project Workbench that began shipping last week.

The bank has been beta testing the release for a few months, and Sisto said the Windows version is even easier to use than the DOS version. In preliminary testing, Sisto said, the software's report management facilities are more flexible under Windows than on DOS.

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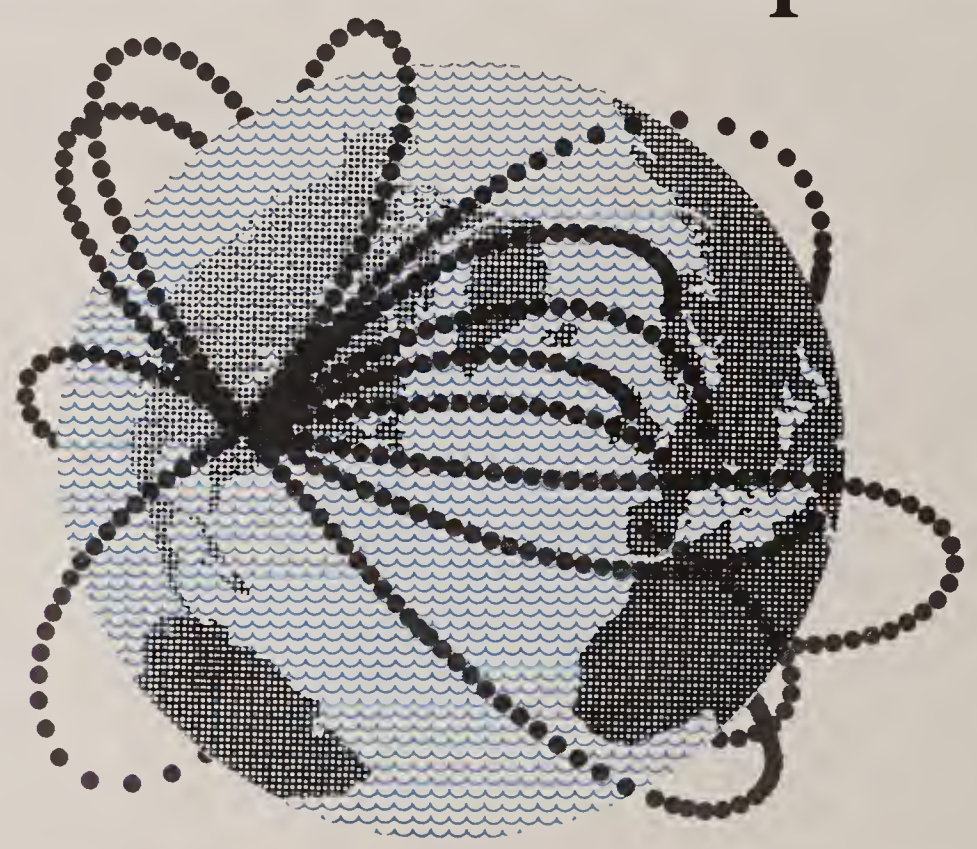

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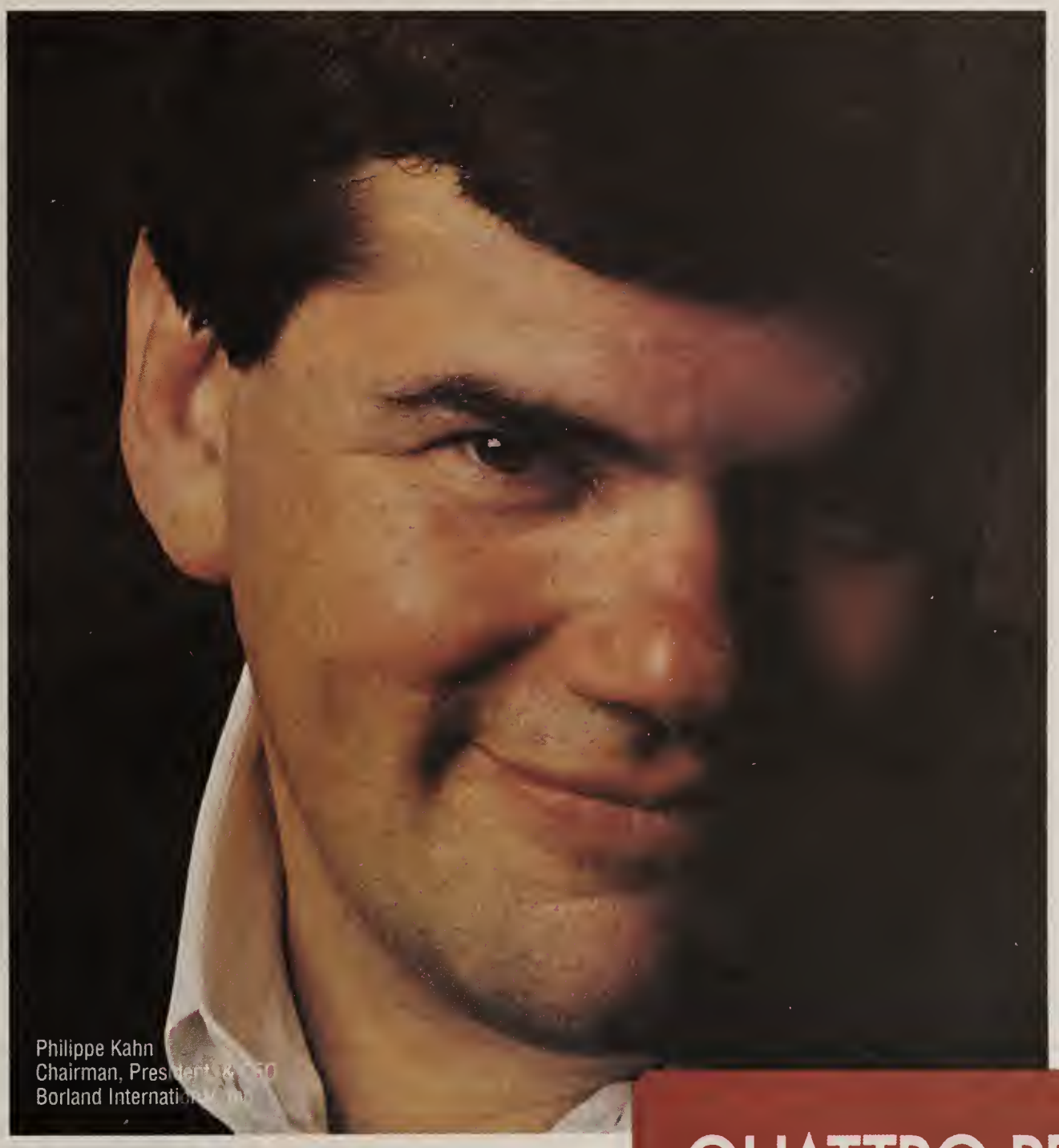

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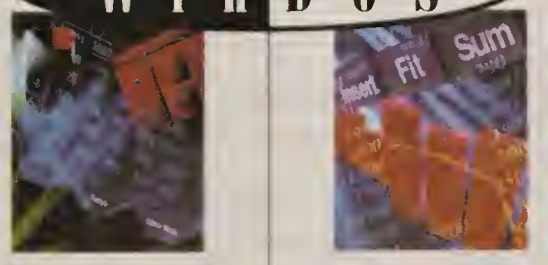

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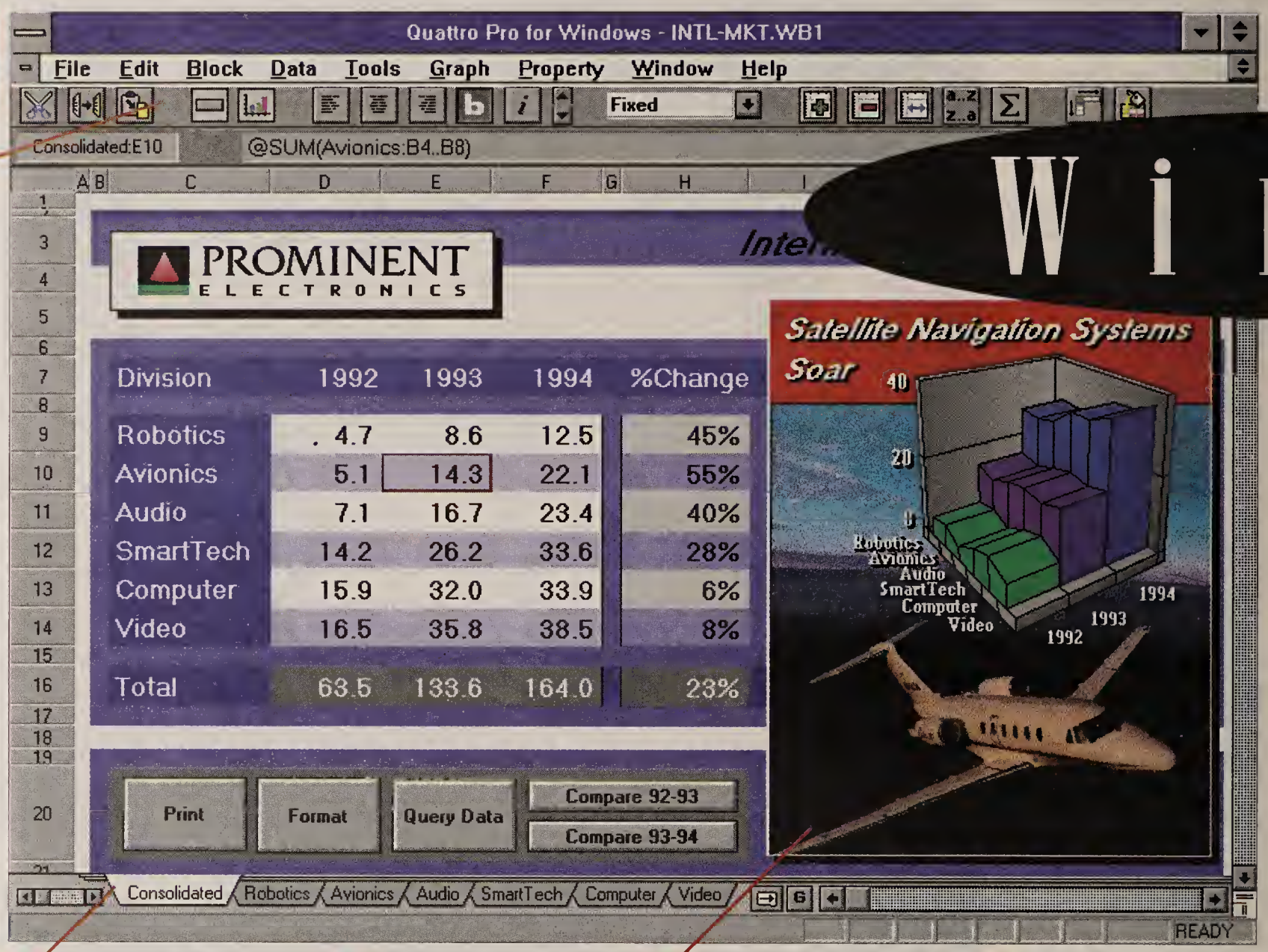

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Get new Quattro Pro for Windows with Spreadsheet Notebooks

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Spreadsheet Notebooks* with nameable tabs are nothing less than a revolution in spreadsheet productivity. From everyday tasks to complex projects, Spreadsheet Notebooks are the easiest way to work with your spreadsheet. You organize and manage your spreadsheet work more intuitively than ever before. Finding information is as easy as flipping through the tabs of a notebook. Multi-page 3-D linking and consolidation is easy for everyone. Model building, group formatting, and presentation preparation are greatly simplified.

Then there's new **Object Inspectors**,™ which make Quattro Pro for Windows so fast and easy to use that you may never open a manual. A simple click of the right mouse button lets you make changes to any object on your screen in one easy step—no more searching through layers of pull-down menus. Never has so much spreadsheet power been so easy to use.

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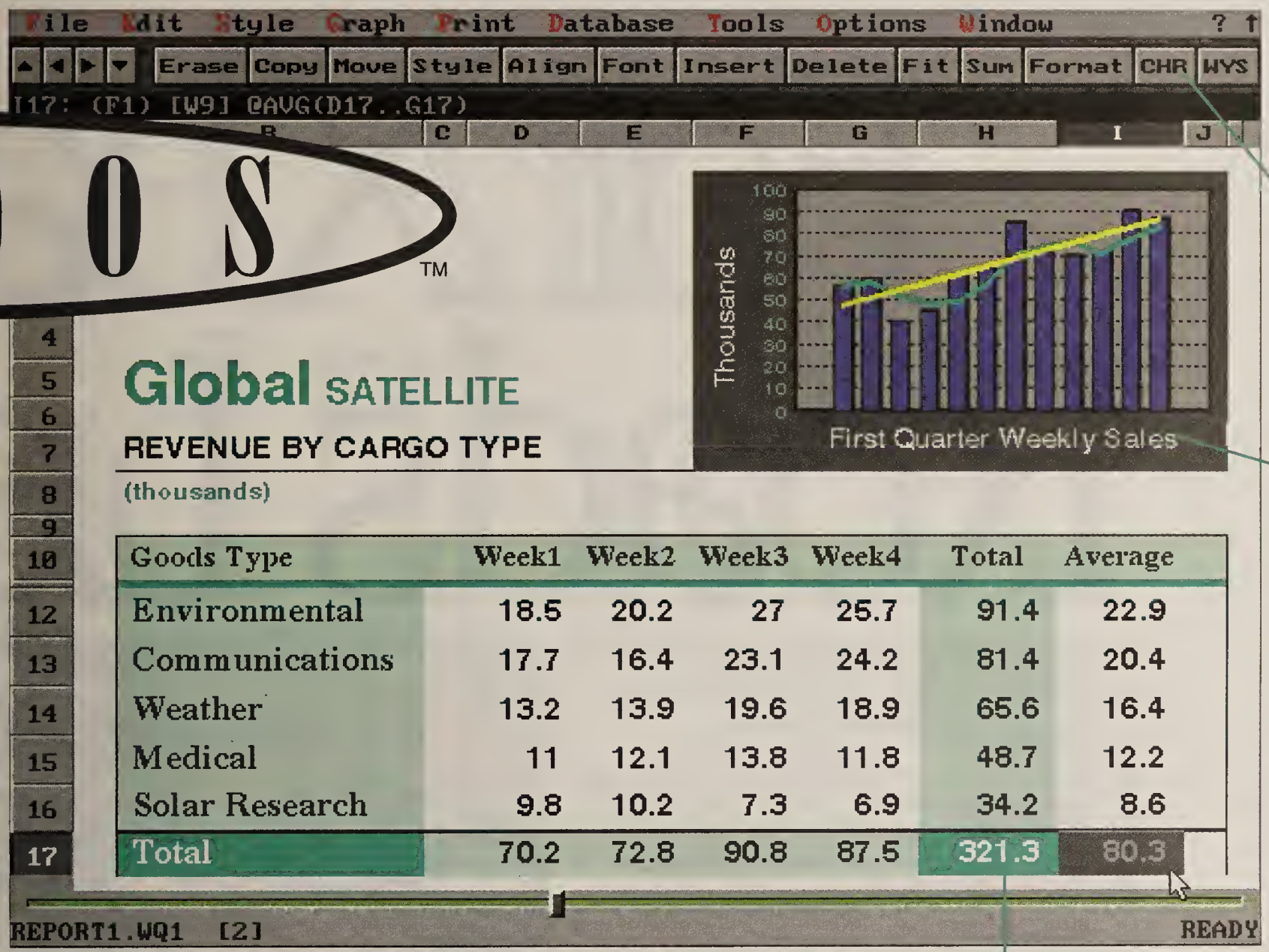

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†Usability Sciences Corporation Study, July, 1992. BI 1472

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Imaging conference keys on work flow

BY TOM HOFFMAN
and ELLIS BOOKER
CW STAFF

NEW YORK — Only a handful of vendors used the Imaging Expo trade show two weeks ago as a launchpad for new products. Those that did generally brought along enhancements to existing product lines, promising to ease the addition of imaging to existing applications and business settings.

Taking center stage once again were work-flow software systems, which manage the routing and processing of images and associated work among individuals and applications. The focus on work flow has become a familiar theme at recent electronic document imaging shows and conferences.

Optika Imaging Systems, Inc. introduced three new software modules for work flow, signature verification and multilevel electronic file folder management. The modules are linked to Optika's FilePower local-area network-based image- and data-management software suite.

Each of the three software modules are network- and platform-independent and are based on SQL database management servers. The software modules are compatible with all of Optika's FilePower products and can be purchased as part of the initial system or as incremental enhancements.

PaperClip Imaging Software, Inc. announced a work-flow component to a new version of its flagship PaperClip software. PaperMover automates creating, deleting, updating and routing documents and folders in the PaperClip system. PaperClip 2.0 also includes support for Intelligent Character Recognition, IPX on Novell, Inc. networks and dual-image storage systems. Scheduled to ship Oct. 1, PaperClip 2.0 ranges in price from $1,995 for the single-user version to $10,850 for the network version.

PRC, Inc., based in McLean, Va., introduced a document-imaging and work-flow tool kit called RoleModel Image. The client/server-based software was designed to support pilot, departmental and enterprise-wide systems without application modifications. The tool kit provides standard application programming interfaces that were designed to work with users' current application programming environments, computer-aided software engineering tools or fourth-generation languages. The software is compatible with industry standards such as Transmission Control Protocol/Internet Protocol, Government Open Systems Interconnect Profile, Unix and Windows. But no pricing or availability information was provided.

Digital Equipment Corp. announced an agreement with **Genesis Software, Inc.** in Kansas City, Mo., under which DEC will market, distribute and service the Genesis ImageNow software. ImageNow was designed to integrate document images in character cell-based applications such as DEC's DECforms software and CICS applications running in IBM's MVS environments. ImageNow, which works with DEC's DECimage Express document imaging software system, can also be integrated with DEC's Pathworks personal computer networking software. ImageNow is available in a 10-user package priced at $6,448.

FileNet Corp. announced that it has pushed up the date to deliver its Series 6000 servers. Originally slated for a fourth-quarter debut, successful beta testing enabled FileNet to begin shipping the servers this month. The Series 6000 servers, introduced in May, are based on reduced instruction set computing technology from IBM and were designed to provide enterprise-wide imaging applications on industry-standard server platforms and workstations.

For Xba
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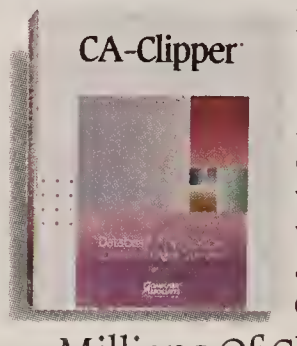
It's been a very difficult and confusing couple of years for Xbase developers. Filled with uncertainty and doubt about the future. At times, some questioned whether Xbase even had a future.



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Video to get multiuser boost

MOUNTAIN VIEW, Calif. — Start-up firm Starlight Networks, Inc. is scheduled this week to release software designed to create a video application server for multiuser, networked multimedia applications.

The Starworks software runs on an Intel Corp. I486-based computer with an Extended Industry Standard Architecture bus sitting on an Ethernet network. Starlight said that such a server can support up to 20 simultaneous users working with IBM-compatible personal computers or Apple Computer, Inc. Macintoshes.

According to Starlight, multiuser, multimedia applications that Starworks can assist include training, point-of-sale, on-line reference and video databases. A company spokeswoman said the software, when placed on a dedicated server, can manage the flow of data for the video application, maintaining the steady stream of data that video applications require.

The server is said to be compatible with popular local-area network operating systems such as Novell, Inc.'s NetWare, Apple's AppleShare and Microsoft Corp.'s LAN Manager. It also works with various digital video systems, including Intel's Digital Video Interactive, Apple's Quicktime, Microsoft's Audio Video Interleave, and the JPEG and MPEG standards from the Joint Photographic Group and Motion Picture Experts Group.

Starworks, scheduled for delivery next month, will initially be available through value-added resellers and systems integrators or to volume corporate buyers. The 12-user version has a list price of $9,950, and the 20-user version is priced at $18,495. The vendor said Starworks will be available for general sale in second quarter 1993.

IN BRIEF

HP airs wiring hub

■ **Hewlett-Packard Co.** introduced a 10Base-T wiring hub that the company said can be upgraded to Simple Network Management Protocol with a software upgrade that does not interrupt operations or require hardware alteration.

■ **IBM** came out with a mail-order catalog and toll-free number for ordering RISC System/6000 systems and peripherals. Customers can call (800) IBM-CALL from 8 a.m. to 7 p.m. EST to request products or information.

■ **Harris Corp.** in Fort Lauderdale, Fla., recently declared itself the first company to comply with the IEEE open systems standard for Posix 1003.5, which defines the interface between the Ada language and the operating system. System designers using Harris' Night Hawk line of computers and Ada can now build high-performance, multithreaded Ada applications that are readily portable to other systems running Posix-compliant Ada.

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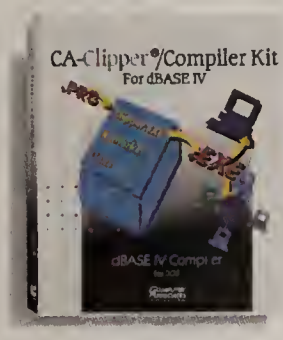

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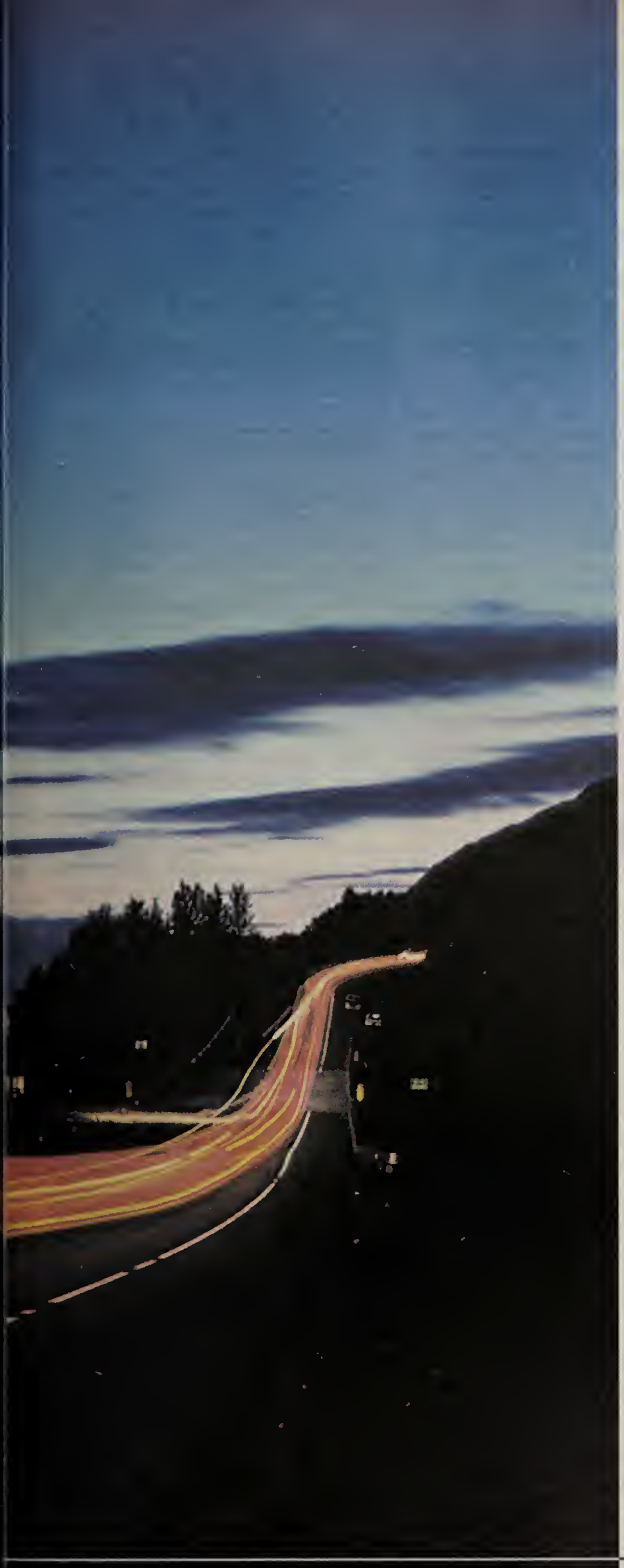

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NEW PRODUCTS

LAN hardware

Reflexion Technologies, Inc. has introduced EtherPort Executive, a portable Ethernet adapter.

The EtherPort Executive includes prebuilt drivers and an intelligent desktop connector. EtherPort Executive features support for thin coaxial and twisted-pair Ethernet connections, the company reported.

The product also has drivers that support Novell, Inc.'s NetWare.

EtherPort Executive costs $399.

Reflexion Technologies
109 Fourier Ave.
Fremont, Calif. 94539
(510) 656-4900

LAN software

Digital Equipment Corp. has announced InfoServer Client for the Macintosh.

According to the company, the software expands the availability of information to Apple Computer, Inc. Macintosh users by providing access applications on DEC's InfoServer 150 network storage server.

Improvements of 30% to 60% have been made for network multimedia applications operating on Apple's Quicktime, and the product gives networked Macintosh users access to thousands of MS-DOS compact disc/read-only memory databases.

The InfoServer Client for Macintosh software costs $785.

Digital Equipment Corp.
146 Main St.
Maynard, Mass. 01754
(508) 493-5111

Modems

PSI Integration, Inc. has introduced PowerModem III, an internal fax modem.

The product was designed for the Apple Computer, Inc. Macintosh PowerBook. Features include very low power consumption and compatibility with System 7.0. PowerModem III sends and receives faxes and data at rates of 14.4K bit/sec. With data compression, the actual throughput can achieve speeds of up to 57.6K bit/sec. Support is included for an assortment of data compression and error correction standards such as V.32 bis, V.32, V.42 bis, V.42 and V.23.

PowerModem III costs $799.

PSI Integration
Suite 200
851 E. Hamilton Ave.
Campbell, Calif. 95008
(408) 559-8544

Micro-to-micro

Micro-Integration Corp. has announced PC Support File Transfer for Windows, a Microsoft Corp. Windows-based file-transfer product designed for use with IBM's PC support.

PC Support File Transfer includes Multiple Document Interface, cut and paste and on-line, context-sensitive help facilities. Interactive and batch operations are available, and full compatibility with Rumba/400 provides a seamless operation.

The product works with IBM System/36, 38 and Application System/400 systems and is compatible with a number of communications platforms including twin-axial, asynchronous, Synchronous Data Link Control and Token Ring.

A single-user version of PC Support File Transfer for Windows costs $195.

Micro-Integration
215 Paca St.
Cumberland, Md. 21502
(301) 777-3307

Unix

Futureware Systems, Inc. has released Version 1.4B of V/Mail, an electronic-mail system for Unix and Unix-based systems.

According to the company, V/Mail is an E-mail application for dumb terminals and graphical Unix workstations. Features include enhanced security, highlighted bar menus, scroll menus for file selection and pop-up Help windows. A word processor-style message editor can compose and send multipage messages, memos and letters.

Prices start at $50.

Futureware Systems
Suite 203
2550 Golf Road
Rolling Meadows, Ill. 60008
(708) 437-8700

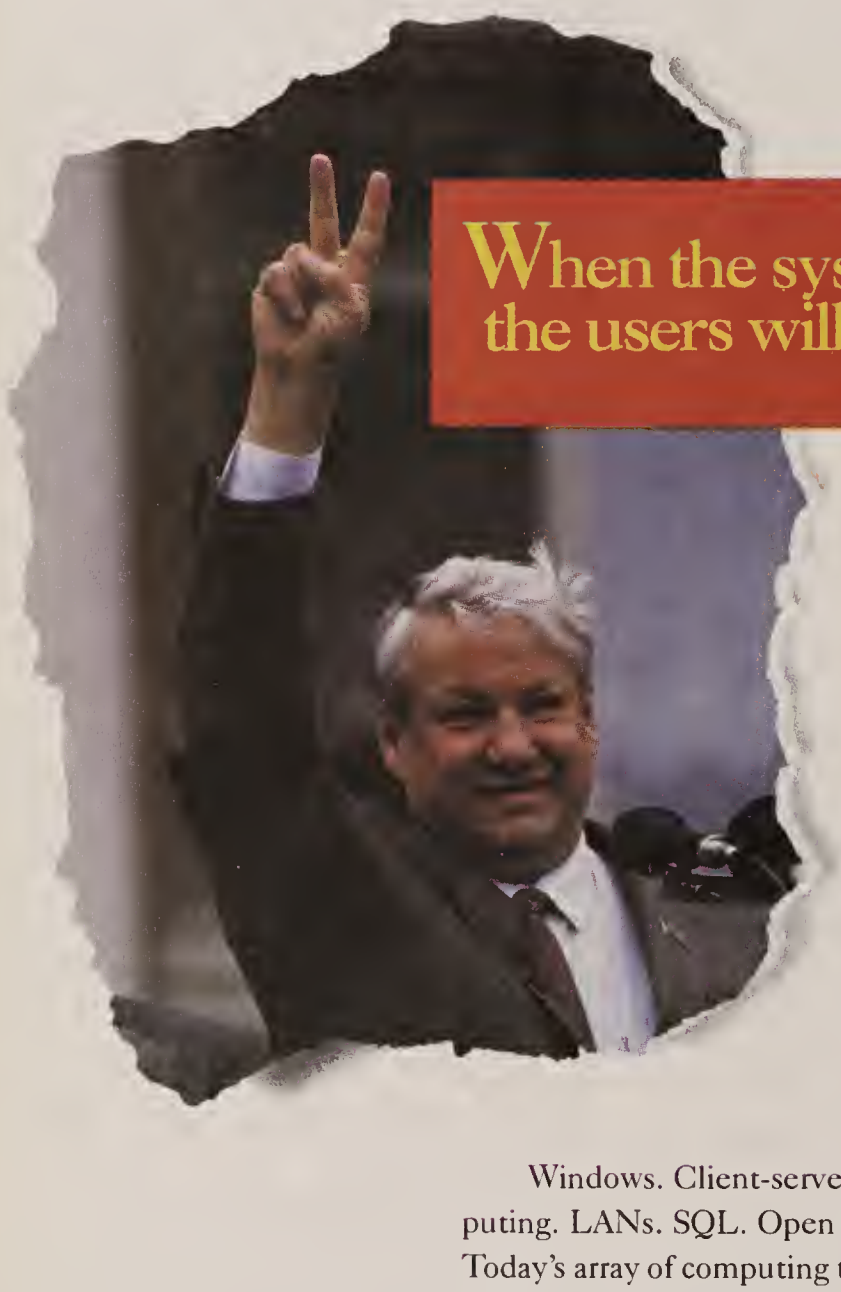
Workgroup software applications

Design Data Systems Corp. has announced Version 2.0 of SQL Time.

SQL Time is a project accounting and management product. SQL Time can be used in client/server and Unix multiuser environments and enables users to confront each phase of budgeting and invoicing. According to the company, departmental budgets can be established, reported on and tracked against actuals. The product offers a variety of reports, including time and attendance and activity and disbursements analysis.

SQL Time prices range from $1,800 to $43,000.

Design Data Systems
Suite 105
11701 S. Belcher Road
Largo, Fla. 34643
(813) 539-1077



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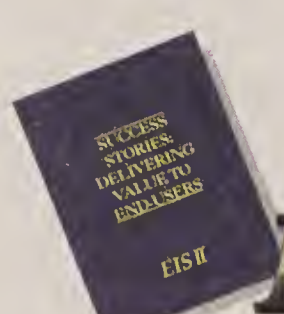

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Is wide-area wireless secure?

ANALYSIS

BY ELLIS BOOKER
CW STAFF

Princess Diana thought her romantic telephone call in late 1989 with an American oil magnate was private — until portions of it were published in a London tabloid recently.

Di's mistake? She reportedly used a cellular telephone, the signals from which can be intercepted by commonly available radio scanners. Already a popular medium for voice, wireless is fast coming into its own as a solution for mobile data users.

But is it safe? Are electronic notes and files sent across the air susceptible to transmission errors or, even worse, interception by prying eyes?

Answering this question is very important to mobile workers and the companies that employ them. Wireless data networking "untethers" ambulatory workers, many of whom already tote laptop, notebook or palmtop computers.

According to a study by BIS Strategic Decisions, a Norwell, Mass., research firm, the wireless messaging market will grow 75% between 1992 and 1995, from $18 million to $173 million. BIS predicts that by the year 2000 the mobile data market will reach about 6% of the installed base of mobile communications subscribers.

Safe contention

Providers of wireless data networks, not surprisingly, contend that their networks are secure because of some inherent features of the technology that make eavesdropping difficult and because of error-checking and error-correcting protocols.

The carriers point out that there are a number of basic differences between a wireless data message — typically sent over a wireless packet network — and a voice phone call placed over an analog cellular network.

For starters, data is typically sent in digital form, making it hard to decipher even if the raw signal is intercepted. In addition, the transmission of a text message (the predominant kind of transmission on wireless wide-area data networks today) occupies a very small window of time and is sent from a comparatively low-powered transmitter, making signal capture difficult.

Finally, unlike the cellular scenario, scanners for wireless digital data are not widely available.

Security "is a question that almost always gets asked early in the selling process by potential customers," said Robert Euler, president of marketing at wireless packet network service provider Ardis in Lincolnshire, Ill. "We almost always get over that objection in five minutes."

Ardis, jointly owned by Motorola, Inc. and IBM, began operation in 1990. The other nationwide provider of a wireless packet data network is New York-based Ram Mobile Data.

Ardis officials note that their network addresses messages to individual devices, each with a unique identification. "If someone stole a device, they'd be capable of decoding messages to that device.... But we could disable that ID so that the unit wouldn't receive messages," Euler said. Similarly, messages from such a "disabled" device would not be processed by the network.

Most communications analysts agree that the security concerns related to wide-area wireless data are no more (or no less) significant than for conventional, land-based networks.

"This issue is often raised, and it's a red herring," said David Kerr, an industry analyst at the Mobile & Wireless North America Service of BIS.

A more significant obstacle for users than security concerns is the inability to cost-justify an investment in wireless connectivity, Kerr said. "Mobile workers today are typically not the priority for IS investments," he said.

Intruder alert

Still, Kerr and others said that no network — wireless or otherwise — can fully foil a determined intruder.

"Once you capture the 'hiss,' you pass it through a frequency analyzer ...," began Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C. But Dzubeck stopped himself. "I don't want to have you publish how it's done," he said. "It's enough to say I've got engineers who work for me [who can do it]."

Ira Brodsky, president of DataComm Research Co. in Wilmette, Ill., said he thinks the biggest issue that will haunt future wireless systems may not be eavesdropping but service fraud, the same problem that conventional long-distance companies confront today.

"A mobile hacker doesn't need to be anywhere in particular to emulate a user," Brodsky said.

Because of this, he predicted that active security systems, perhaps involving industry-standard Personal Computer Memory Card International Association cards for mobile computers, will constantly "shift" a user's password so that "the last [password] that worked won't work on the next access to the network."

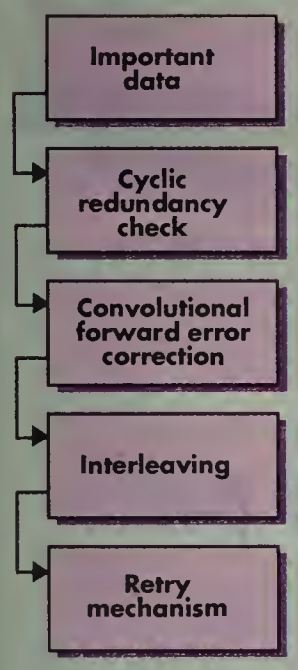
Even Dzubeck conceded that unscrambling the digital signal on a radio frequency packet network to tease out its messages would require "weeks of work" and involve specialized hardware.

Still, Dzubeck said he figures that in the future — perhaps following a publicized security breach — "all [wireless data] will be encrypted."

To date, he added, only one or two commercial customers using wide-area wireless networks have added encryption.

Comfort zones

Ardis reliability and data security mechanisms



Ardis error-control mechanisms were designed to reduce probability of delivering invalid data message to 10^{-8}.

- Cyclic redundancy check ensures that decoded data is correct.
- Data is discarded if cyclic redundancy check is wrong.
- Convolutional forward error-correction encoding is used to detect and correct missing/corrupted data.
- Bit-oriented as opposed to block-oriented to permit interleaving of encoded bits for better error control.
- Interleaving scrambles encoded data bits and distributes adjacent corrupted bits over a wider time space to permit individual correction.
- A retry mechanism permits damaged messages to be resent.

CW Chart: Stephanie Faucher

LAN growth spurs router design focus

Reliability, availability, hot swapability are key

ANALYSIS

BY JOANIE M. WEXLER
CW STAFF

Hardware: Part I of a two-part series on router architectures.

As local-area networks proliferate and the applications running on them become increasingly mission-critical, users are taking a closer look at the architectures of the devices they rely on for linking LANs into sprawling internetworks: routers.

The way routers are fundamentally designed largely determines how the gear will hold up in the areas of performance, reliability and scalability as internetworks burgeon and traffic loads increase.

"We're about to see a fundamental change in the way internetworking is purchased," asserted Nick Lippis, president of Strategic Networks, Inc., a Rockland, Mass.-based consultancy. He predicted a user priority shift from volume of protocols supported and straight performance numbers to "reliability, availability and hot swapability."

For example, explained Jeff Marshall, senior managing director of communications at Bear, Stearns & Co. in New York, "I've instructed my people to start looking at how devices are put together to see if they have forward scalability and to determine what barriers we'll hit if we continue to grow at specific rates."

Marshall said that as LAN-based applications grow, "router architecture issues will absolutely have more significance."

Primarily, the brokerage firm uses Wellfleet Communications, Inc. routers and some Cisco Systems, Inc. devices. To date, the rival vendors have taken different design approaches.

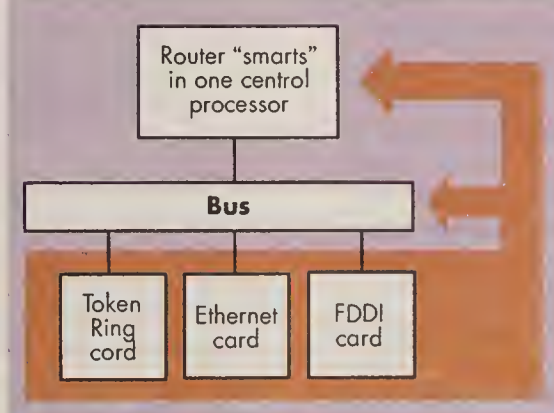
Router hardware architectures are roughly divided into two categories (see diagram). Most, such as Cisco's current line, operate on the concept of a centralized processor that handles key functions and is shared by multiple, relatively dumb network interface cards that exchange data over a shared "highway," or bus.

Continued on page 64

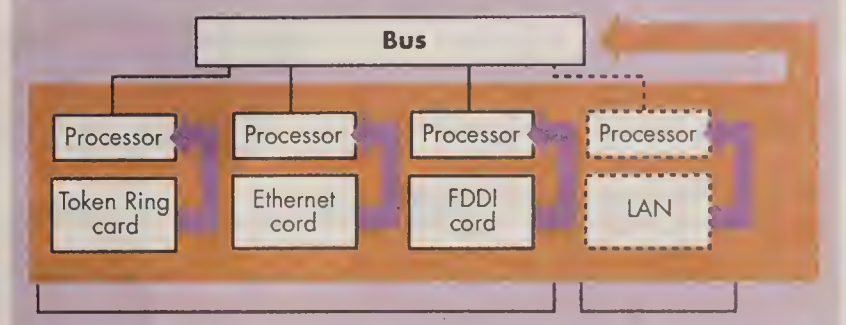
Router hardware approaches

Users' router-buying criteria may shift emphasis to architecture-oriented issues, such as scalability and reliability, analysts say

Centralized architecture (computer bus-based)



Distributed architecture



CW Chart: Stephanie Faucher

Sniffer net analyzer able to distinguish router protocols

BY ELISABETH HORWITT
CW STAFF

MENLO PARK, Calif. — The latest incarnation of Network General Corp.'s Sniffer protocol analyzer, announced last week, is said to help network managers resolve response time problems and bottlenecks on wide-area links between local-area networks.

While a number of products are said to monitor overall traffic levels across an internetwork link, Expert Sniffer Internetwork Analyzer stands out because of its ability to analyze how various routers handle different types of protocols, such as Transmission Control Protocol/Internet Protocol (TCP/IP) and Novell, Inc.'s IPX, Network General said.

What has made this function difficult is that each router vendor uses a proprietary method of packetizing the protocols, which a monitor must understand in order to perform router traffic analysis, according to Network General Vice President Jay Weil.

Sniffer has the useful ability to analyze what percentage of bandwidth each protocol is taking up at any given time "and which is hogging the network," said Tom Wood, a senior industry analyst at Business Research Group, a Newton, Mass., research firm.

Traffic cop

The product can also act as a troubleshooter when the network manager uncovers an unexplained traffic bottleneck or a user who is unable to send across the network, Weil said. For example, protocol analysis can discover that "routers are not configured right and are sending updates to each other every five seconds instead of every five minutes," resulting in traffic congestion, he added.

One limitation of this Sniffer version is its inability to analyze traffic patterns across an internetwork that includes multiple, multihop router connections. Users must take the Compaq Computer Corp. 386 portable that houses Sniffer and install it for about a day to analyze a link between two particular routers, Weil acknowledged. The device is then unplugged and moved onto the next link, so that analyzing an entire network could take a week or two, he added.

Given the changeability of many internetworking installations, the analysis may be out of date by the time it is finished. Another limitation of this type of analysis is that it leaves out the effects of changing routing algorithms that react to changes in traffic patterns.

"Network General is talking about the old mind-set of protocol analysis — you plug in, see if it works, plug elsewhere," Wood said.

However, Network General expects to deliver a distributed version of Sniffer Internetwork Analyzer that will be able to collect information across multiple internetwork links in one place sometime next year, Weil said.

Wood praised the current product's expert system module as "a step in the right direction" that provides guidance for less technical network managers.

The expert system can perform the analysis and display exactly what symptoms it has uncovered, Network General said. The user can get an explanation of the symptoms by simply hitting the "explain" key.

Hearty welcome

George Morales, network analyst at Holiday Inn Worldwide — which has a mixture of Novell IPX, TCP/IP and Systems Network Architecture (SNA) on its wide-area networks — is glad to see the product. If there is a problem on the network, IBM support people's typical first answer is "the network is congested," Morales said. Up until this point, he said, we have not had a tool that could show performance as opposed to traffic levels "to show tangible evidence that there are no errors or no congestion on a particular segment."

While Morales has yet to test Sniffer Internetwork Analyzer, he said he plans to do so soon. He is also interested in the distributed version.

"I also want to see something while it's happening without having to break the line," Morales explained. "When you [break the line], then you re-establish the link, the problem is often gone."

Sniffer Internetwork Analyzer comes in three modules, each of which includes the preceding modules.

LM 2000 WAN Module monitors traffic over asynchronous, bisynchronous, IBM SNA, X.25 and frame-relay links, the vendor said. It will be available next month, priced at $8,495.

Sniffer Internetwork Analyzer analyzes more than 140 protocols and supports Cisco Systems, Inc., Wellfleet Communications, Inc., Vitalink Communications Corp. and Retix routers. Priced at $15,500, it is scheduled to ship in the fourth quarter of this year.

Expert Sniffer Internetwork Analyzer includes all of the above modules plus an expert system module and the ability to analyze bandwidth utilization statistics. Priced at $18,500, it is scheduled to ship in the first quarter of 1993.

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PolyCenter links SNA with DECnet

BY MELINDA-CAROL BALLOU
CW STAFF

Information systems departments attempting to manage mixed IBM and Digital Equipment Corp. sites may welcome the announcement earlier this month of products that DEC officials said will allow them to integrate IBM Systems Network Architecture (SNA) and DECnet networks.

DEC, together with Systems Center, Inc. in Reston, Va., jointly developed and will soon release PolyCenter SNA Manager Version 1.0 [CW, Sept. 7]. Together with Solve:Connect for EMA from Systems Center, these products will let users exchange information bidirectionally on DEC and IBM resources and monitor and control several types of networks at once, including SNA, DECnet Phase IV, Transmission Control Protocol/Internet Protocol and DECnet Open Systems Interconnect (OSI) from either DEC's DECmcc Director, Systems Center's NetMaster or IBM's NetView.

"Large customers are now using IBM and DEC systems together to deliver applications. It's no use just managing one or the other," said Michael Matthews, vice president of strategic marketing at Systems Center. "We built an object-oriented model of an SNA environment so that we can project the SNA world onto an OSI management system and vice versa, for instance."

Users spoke of the need for and the economic benefits of managing mixed networks from one product.

"Absolutely, we would like to be able to manage both our networks from one side and have even attempted to do that with other products, but they have typically fallen short of being able to manage enough [types of] events to make it worthwhile," said Joe Papa, systems software specialist at the California legislature in Sacramento, which has both DECnet and SNA networks. "In order to be able to do real troubleshooting, you need to be able to get sophisticated with the network integration management tool."

Henk Hazelhoff, assistant consultant in corporate information systems at Dow Chemical Corp. in Midland, Mich., added, "The big benefit would be that operators familiar with NetView and who occasionally need to do something in the DEC world would be able to do so, and the reverse would also be true."

Additional products unveiled by DEC include: DECathena Version 1.1, a turnkey distributed computing and management environment that now offers client support for Sun Microsystems, Inc., Hewlett-Packard Co. and IBM Unix platforms; PolyCenter Systems Census Version 1.0 configuration software; PolyCenter System Watchdog Version 1.0 and PolyCenter Account Manager Version 1.0.

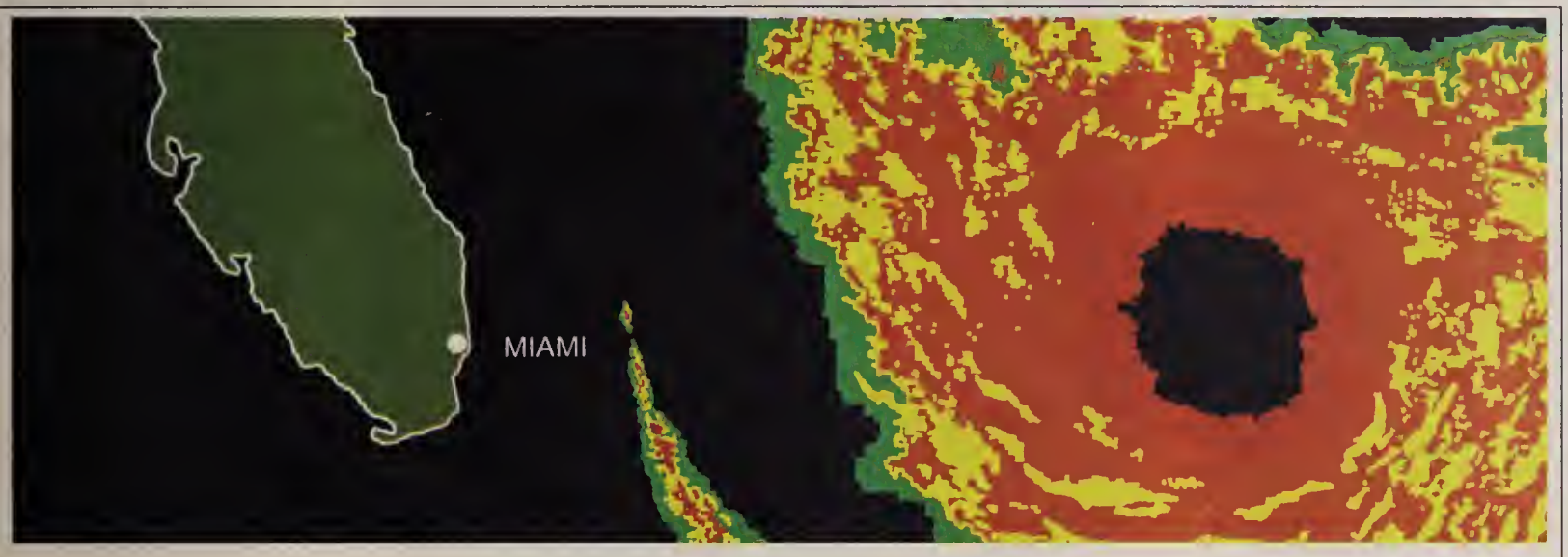
Managing scattered systems

Systems Census integrates three software products that collect system configuration information and consolidate the data into either Rdb on VMS or Oracle Corp.'s SQL relational database management systems on Ultrix for viewing. This can allow IS departments to more easily manage large, geographically scattered systems, officials said. The three portions of the product include an Agent that discovers, identifies and collects system data; a Consolidator that consolidates the data collected by the Agent into the SQL database and provides sample reports; and a graphical user interface (GUI) that provides multiple views of the data via a Motif interface.

System Watchdog Version 1.0 lets managers detect and solve problems occurring on systems connected by local- or wide-area networks, and the PolyCenter Account Manager facilitates the process of registering users on VMS systems and associated applications.

DEC will also begin offering consulting services in November for a Lights Out Computing Design service that will allow users to design remote, automated data centers that can run unstaffed. This service will provide users with a design, a set of recommendations and a cost-benefit analysis.

PolyCenter SNA Manager Version 1.0 is priced at $15,314, and Solve:Connect for EMA pricing ranges from $20,000 to $70,000, depending on IBM processor. Both products are slated to ship in November. DECathena Version 1.1 pricing for a start-up package starts at $45,000; support for Sun clients is shipping now, and support for HP/UX and IBM AIX clients is set to ship in November and January, respectively. The Systems Agent, Consolidator and GUI are shipping this month and are priced separately starting at $355. The System Watchdog is scheduled to ship next month; its two components are priced separately starting at $175.



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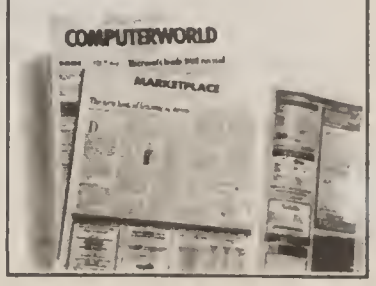

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LAN TIMES READERS CHOICE 1992

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- BIMSPOON - DOS/VSE On-line to Batch Print Spooling
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LAN increase spurs focus on router design

CONTINUED FROM PAGE 59

The main processor handles such tasks as packet forwarding, routing table updates and network management.

Other "centralized" vendors include Advanced Computer Communications, Inc., start-up Coral Networks, Inc., CrossComm Corp., Digital Equipment Corp., IBM, Network Systems Corp., Proteon, Inc., 3Com Corp., Retix and Vitalink Corp.

However, "the single-CPU approach ..... means there is a limit in the growth of that box and a possible single point of failure," Lippis said.

While many observers harp on the single-processor vulnerability threat, many longtime Cisco users report they have never had an outage.

"Cisco gets around the issue by using industry-standard, proven components," said Coyne Gibson, information technology manager at Convex Computer Corp. in Richardson, Texas. While newer architectures are attempting to address user needs for bulletproof internetworking equipment, these vendors "are to some degree coping with less mature and more complex technology, which makes them more failure-prone," Gibson said.

On the other hand, he acknowledged, "if Cisco's fundamental architecture doesn't change soon, they're not going to be able to compete from a performance standpoint."

Cisco is expected to soon announce a statement of direction for an Asynchronous Transfer Mode switch as its new router architecture. Regarding breathing new life into its existing design, Thomas Daly, Cisco's director of hardware engineering, said, "Cisco feels that building bigger boxes by adding multiple [central processors] is a good concept."

Gibson said reliability is his No. 1 purchase criterion "because I have a very small staff, and we don't want to spend our time worrying about unstable, flaky equipment." He has also been beta-testing Coral's fault tolerance-oriented Broadband Enterprise Switch for some time.

Westford, Mass.-based Coral attempts to alleviate the single-point-of-failure issue by offering redundant options for every router component, explained Sally Bament, senior product manager.

Cisco shop Young & Rubicam, Inc., a global advertising agency based in New York, "has never had a problem" with its Cisco routers, according to Howard Maynard, senior vice president and director of MIS. However, he said his concern with fault tolerance is growing proportionally with the increasing mission-critical nature of his applications.

To that end, "we're considering putting two routers at key locations," he said.

Unlike Cisco's design scheme, distributed router architectures involve coupling a processor with each network interface card to distribute tasks for parallel processing. The idea is to achieve higher performance, confine the effect of a processor failure to its associated, single network and preclude draining the resources of one shared processor as networks get added.

To date, Wellfleet, with its latest Backbone Node line, is the only vendor that falls 100% into the distributed category. However, Coral, DEC and Retix take a somewhat hybrid approach in that they distribute the packet processing function to improve performance.

Cisco has also reportedly begun moving some tasks onto boards to reduce the performance-hindering number of interrupts on the central CPU.

From a redundancy standpoint, Coral's product is positioned at the highest end of today's router array. Coral, Wellfleet and Retix also offer hot-swapability features, which allow users to add or replace certain components while the router keeps running.

Wellfleet relies on its distributed design as opposed to a one-for-one redundancy scheme to achieve no single point of failure, said Karen Barton, director of product marketing, though the Backbone Node has redundant power supplies and data buses.

Cisco represents the opposite extreme with no redundant components. Daly explained, "Cisco doesn't believe in fault tolerance because networks are not fault-tolerant." Rather, he said, Cisco recommends that users achieve networkwide fault tolerance with savvy, mesh-oriented network design schemes.

Next week: Software architectures.

Merging traffic

Router architectures also differ in how they make use of the bandwidth of the internal bus — or data highway — among network ports.

Coral Networks and Network Systems, for example, use a scheme analogous to circuit switching in which they nail up dedicated paths between ports to guarantee consistent network performance.

This costs more because the device requires a bigger bus, and channels in the highway may at times go unused while awaiting transmission from their assigned network. However, the scheme does guarantee performance at line speeds.

All other router vendors use an arbitration method in which communicating ports contend for bandwidth. Router longevity is more limited with this less-expensive scheme, users and analysts noted.

Wellfleet has taken a twist on the shared backplane by splitting its gigabit-per-second bus into four 256M bit/sec. buses over which packets are randomly sent. The scheme couples the efficiencies of statistical bandwidth use with redundancy features. Should one of the four random buses fail, packets would automatically contend for the three remaining.

JOANIE M. WEXLER

NEW PRODUCTS

Network management

Isicad, Inc. has introduced Command HelpDesk, a software package for network help desk and troubleshooting applications.

Command HelpDesk was designed to work with logical network management systems and with Isicad's Command physical network management software package. Users on the network can instigate network requests and trouble tickets. Tools and network processes are provided to help users resolve conflicts.

The product runs on Sun Microsystems, Inc. SPARCstations and Hewlett-Packard Co. Series 700 workstations.

Command HelpDesk costs $12,250.

Isicad
1920 W. Corporate Way
Anaheim, Calif. 92803
(714) 533-8910

Network services

Mainstream Data, Inc. has released Mainstream Newscast for QuickMail.

The product is an electronic-mail news delivery system designed for Apple Computer, Inc. Macintoshes that offers business access to wire services. Mainstream Newscast for QuickMail works in conjunction with CE Software, Inc.'s QuickMail local-area network E-mail system.

Mainstream Newscast for QuickMail costs $695 for the server software. Monthly subscriptions to the various news wires range from $50 to more than $1,000.

Mainstream Data
Suite 200
420 Chipeta Way
Salt Lake City, Utah 84108
(801) 584-2800

Gateways, bridges, routers

CrossComm Corp. has introduced Ilan Jr., an advanced IBM/Token Ring router designed for branch and remote offices.

According to the company, Ilan Jr. is a configured version of the company's Universal Router and can route Systems Network Architecture, Synchronous Data Link Control, NetBIOS and other IBM products. Once it is plugged in, Ilan Jr. automatically learns network topologies and offers advanced diagnostic tools.

Ilan Jr. local costs $6,000; Ilan Jr. remote costs $6,500.

CrossComm
450 Donald Lynch Blvd.
Marlboro, Mass. 01752
(508) 481-4060

Sonic Systems, Inc. has announced DigiLink, a high-speed digital bridge.

The product links remote Ethernet local-area networks through Integrated Services Digital Network (ISDN) telephone lines. The product offers a transmission speed of 128K bytes, which is 13 times faster than a 9.6K bit/sec. modem. DigiLink includes an Ethernet adapter and the ISDN Terminal Adapter and does not require any other hardware. It is configurable through the serial port of an Apple Computer, Inc. Macintosh or is IBM Personal Computer-compatible over a dumb terminal with ASCII terminal emulation software.

DigiLink costs $3,495.

Sonic Systems
#100
333 W. El Camino Real #280
Sunnyvale, Calif. 94087
(408) 736-1900

Proteon, Inc. has introduced the DNX 300 series of bridging routers.

DNX 300M, the first in the series, integrates multiprotocol remote sites and departmental local-area networks into corporate networks via support for Ethernet, Token Ring and a variety of wide-area networks.

The product was designed to make it easy to construct and maintain an internetwork. Proteon's Transportable Software Architecture is incorporated into the series, and support is provided for standard protocols, including Transmission Control Protocol/Internet Protocol.

The DNX 300M is priced from $4,995 to $7,995.

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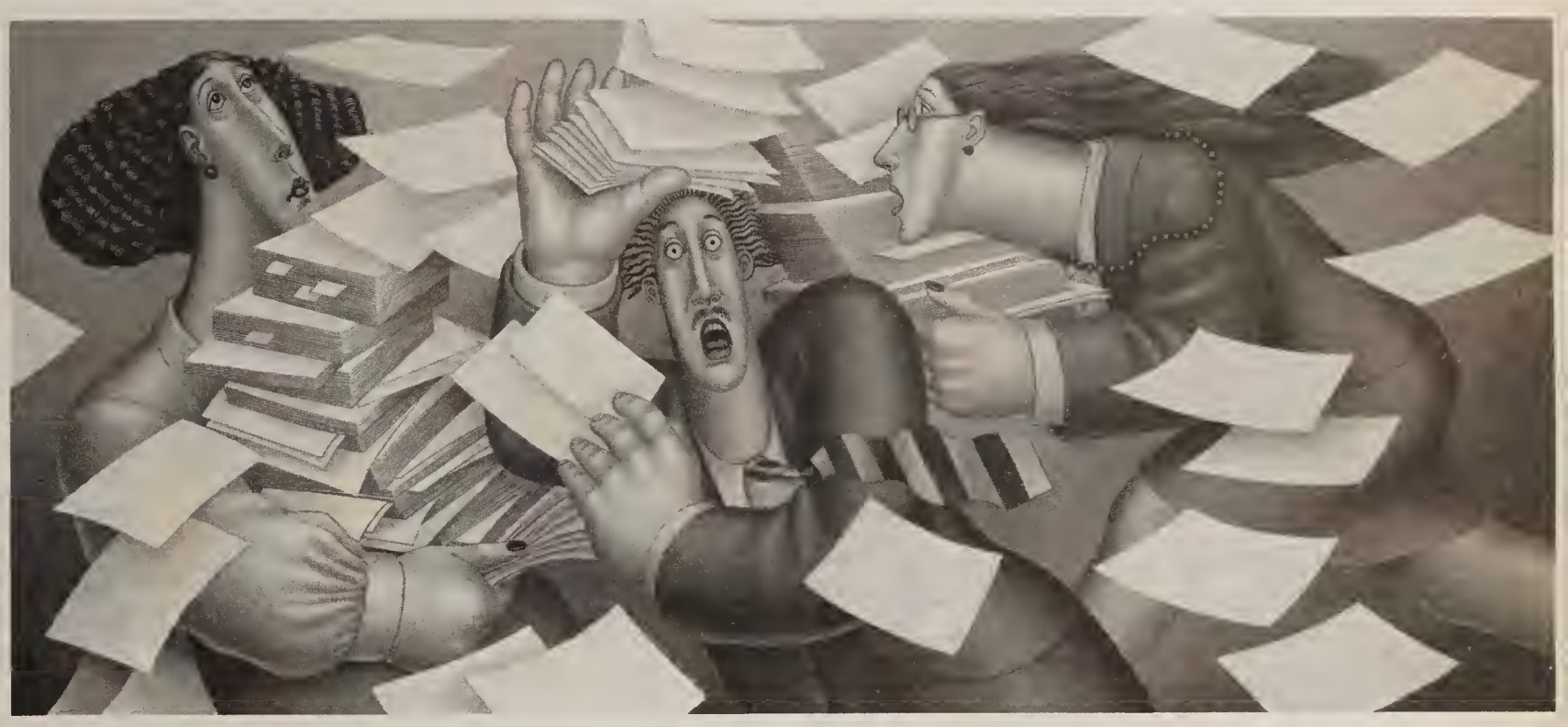

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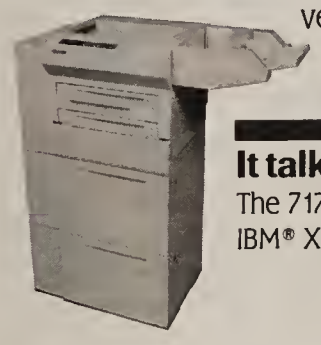

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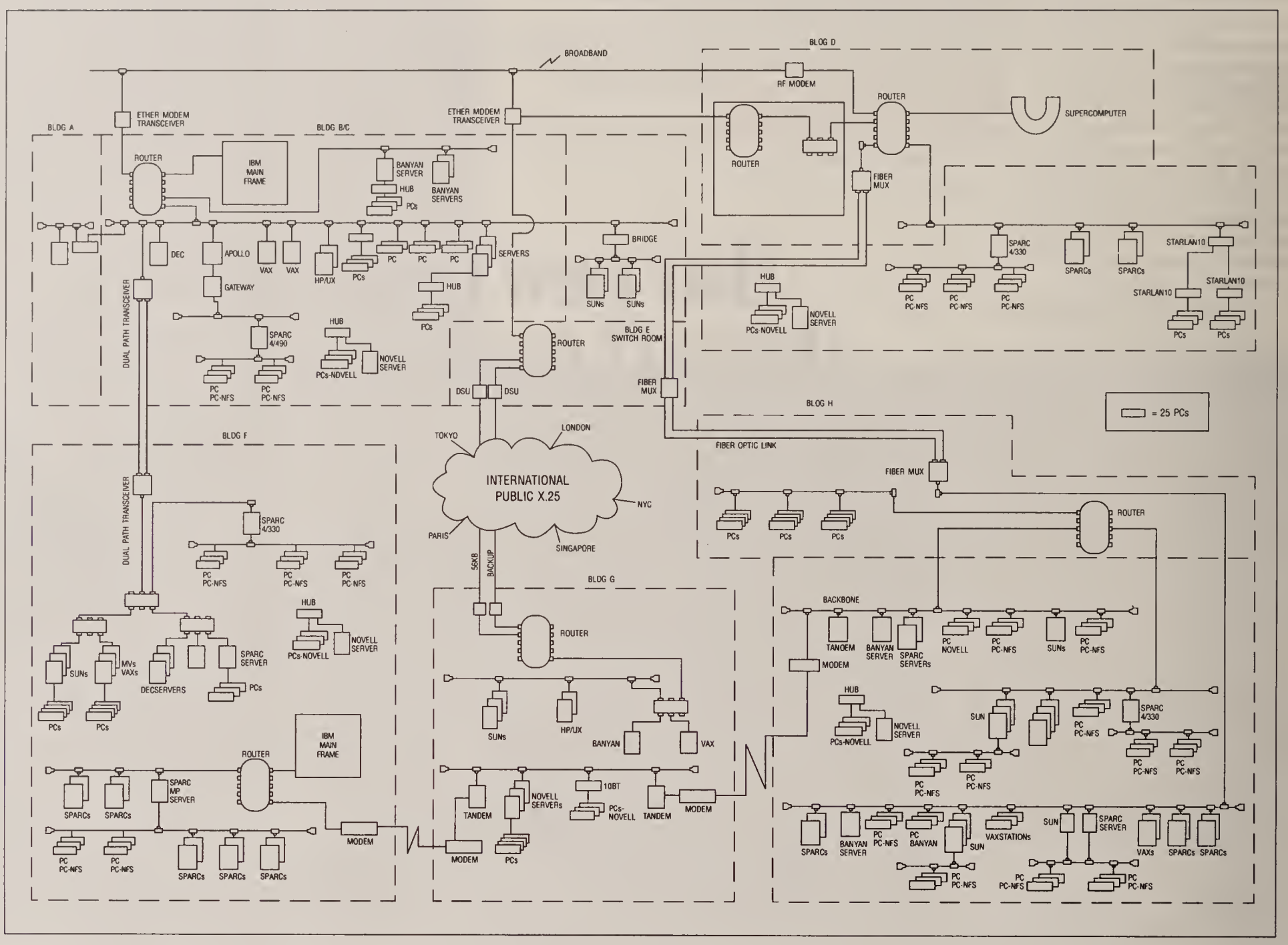

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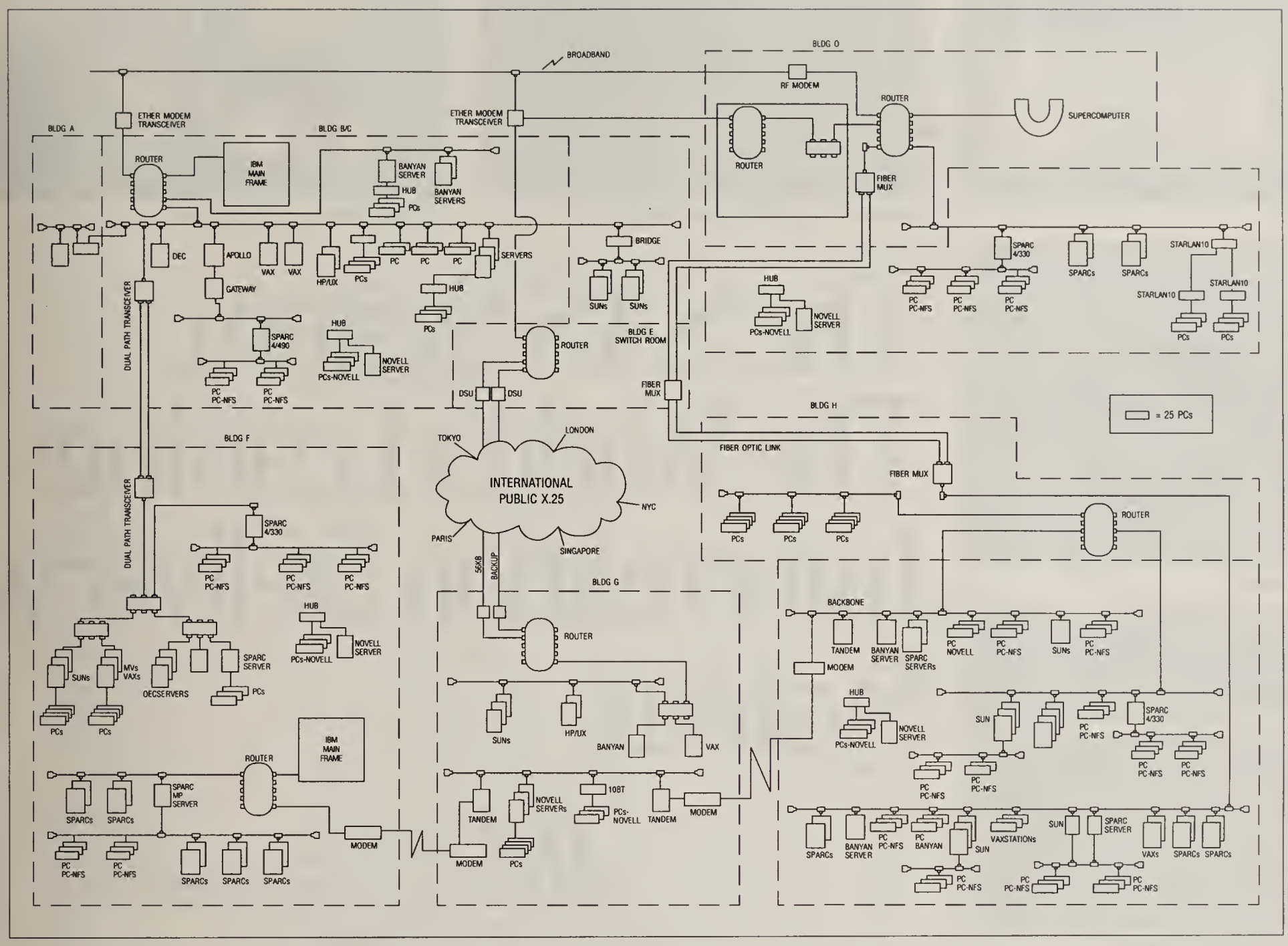
Reality.



(We should talk.)

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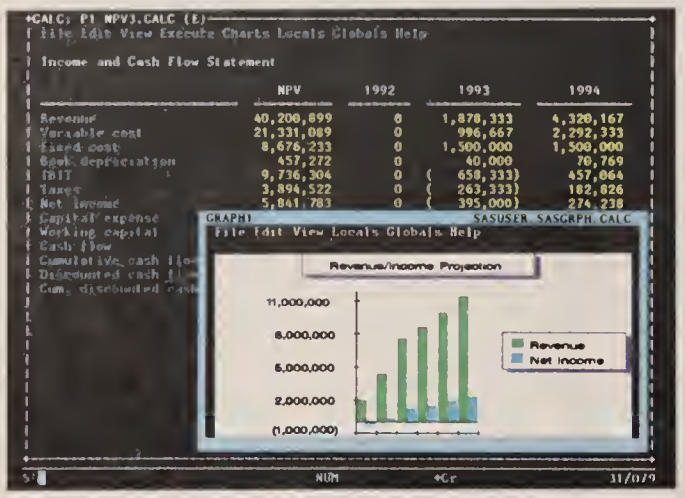
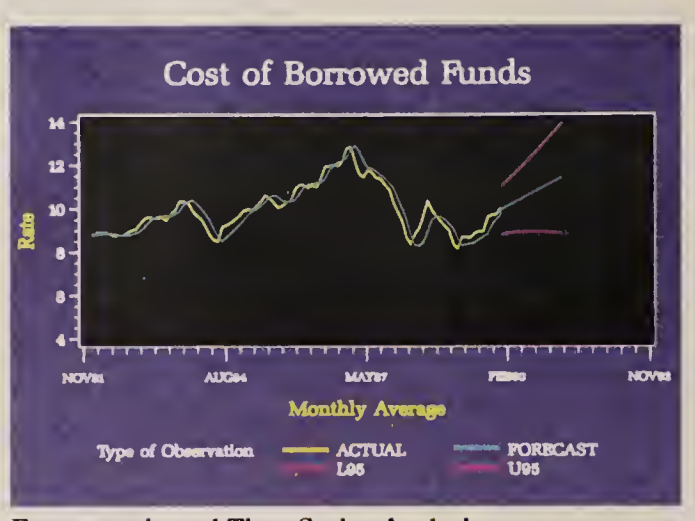
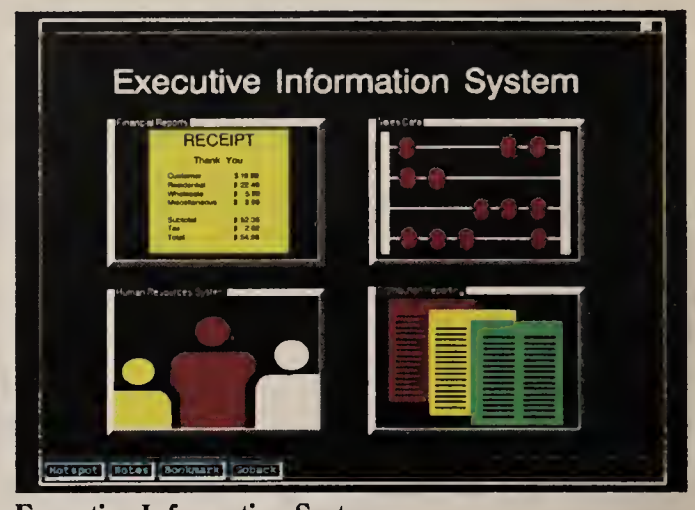


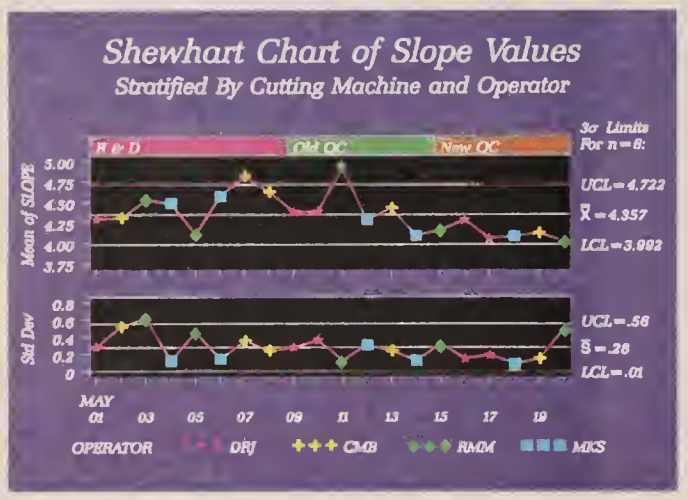
Financial Planning



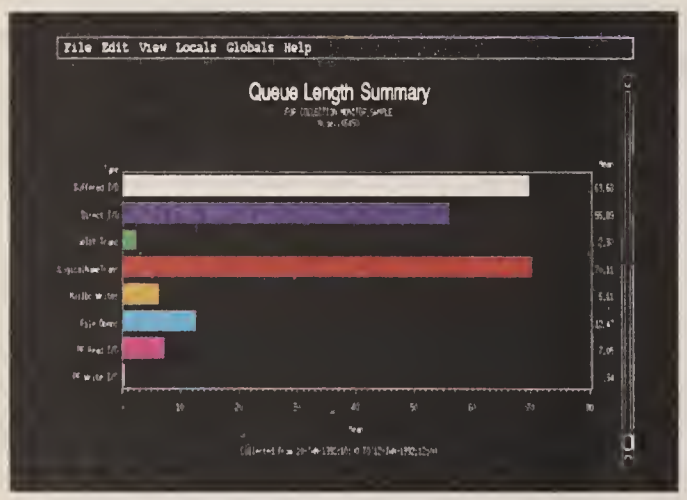
Econometric and Time Series Analysis



Executive Information Systems



Quality Improvement



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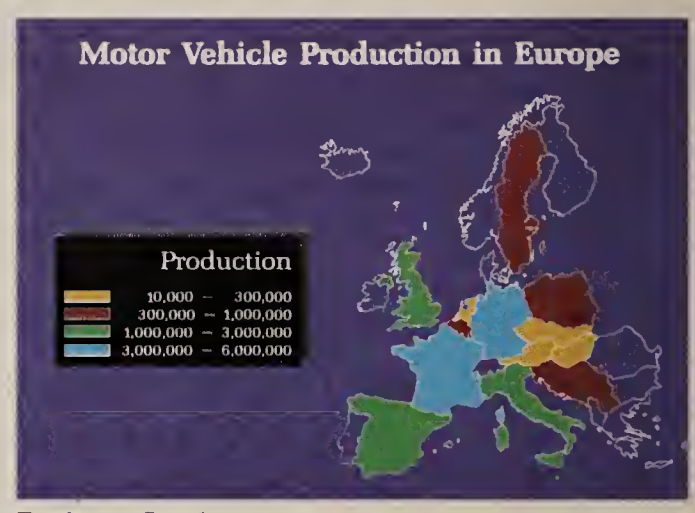
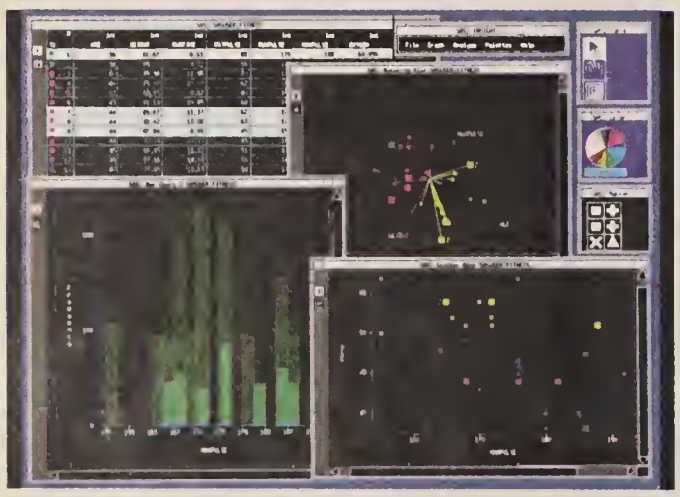
Reporting

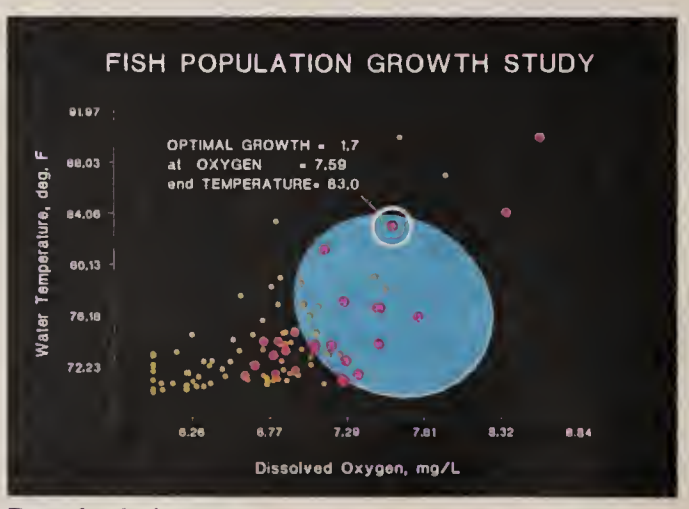
Market Research



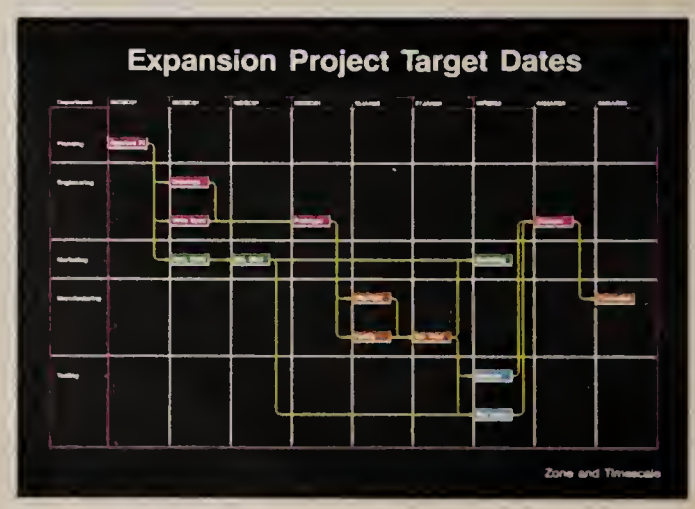
Business Graphs



Visualization



Data Analysis



Project Management

IN BRIEF

IBM helps gas firms

■ **IBM** has announced data access software for the petroleum industry. The Exploration and Production Data Access System, which runs on mainframes under MVS and DB2, will help professionals locate data anywhere in the enterprise. The software is scheduled to be available Oct. 30; future features will include a geographical selection of data.

■ A new partnership between **Sequoia Systems, Inc.** and **Minx Software, Inc.** is aimed at helping global concerns run 24-hour international operations with open systems. The companies will jointly market Sequoia's Series 400 and Series 40 Unix-based fault-tolerant computers running Minxware manufacturing resource planning II software. Under the agreement, the two firms will launch a cooperative marketing and sales training effort, according to sources.

■ Aiming to beef up the commercial allure of its massively parallel DECmpp 12000 series computers, **Digital Equipment Corp.** has teamed with **MathSoft, Inc.** to port MathSoft's technical calculation software to the DEC machines. Adapting popular software for these machines is vital to expanding their appeal, the companies said.

Oracle gains parallel server support

Pyramid, Sequent aim to extend option beyond DEC and supercomputers

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — When Oracle Corp. introduced its parallel server option for computing clusters in March 1991, it only supported Digital Equipment Corp. VAXclusters and supercomputers. Eighteen months later, two vendors of commercial Unix systems say they are ready to support the same option to make their systems more viable as on-line transaction processor (OLTP) workhorses.

> THE two vendors are in a near dead heat to get the software out.

Pyramid Technology Corp. in Mountain View, Calif., and Sequent Computer Systems, Inc. in Beaverton, Ore., both demonstrated their parallel server systems at the recent International Oracle Users Group meeting. Both said they are ready to ship beta-test versions of modified system software that will support Oracle's parallel server option this fall. By 1993, both plan to support production applications on the computing clusters.

When the parallel server option was first introduced with Oracle 6.2 for DEC VAXclusters, it fit with DEC Lock Manager. Other vendors had to invent their own lock managers, something that took Pyramid and Sequent 18 months to devise and refine. Oracle now offers the parallel server option as a module with its new Oracle 7 relational database [CW, June 15].

Pyramid and Sequent chose to let multiple CPUs access the same set of disk drives so that on-line computers can take over for computers that fail. Their lock managers prevent duplicate updates of a single database that "loosely coupled" computers share. That way, multiple copies of Oracle can exist on separate machines yet share data stored on one set of disk drives.

The net effect of the parallel server software is near fault tolerance, industry analysts said.

"The option doesn't give you as much fault tolerance as machines intended for that purpose," said Omri Serlin, president of ITOM International in Los Altos, Calif. "But it does protect the integrity of the database if a particular machine goes down, which is a top concern for most systems people."

Serlin said he believes the option will be effective for centralized parallel servers but not for geographically dispersed ones.

Beta-test site candidates said they are happy with the prospect of parallel server software, saying it will boost the reliability of Unix systems.

> PARALLEL SERVER SOFTWARE will be effective for centralized parallel servers but not for geographically dispersed ones.
>
> OMRI SERLIN
> ITOM INTERNATIONAL

One Sequent user, who has tested Oracle 7, plans to install Sequent's parallel server software as soon as it arrives. "We already have the hardware in place and [are] ready to go," said Michael Higgins, technical support manager at Byer California, a San Francisco maker of women's apparel.

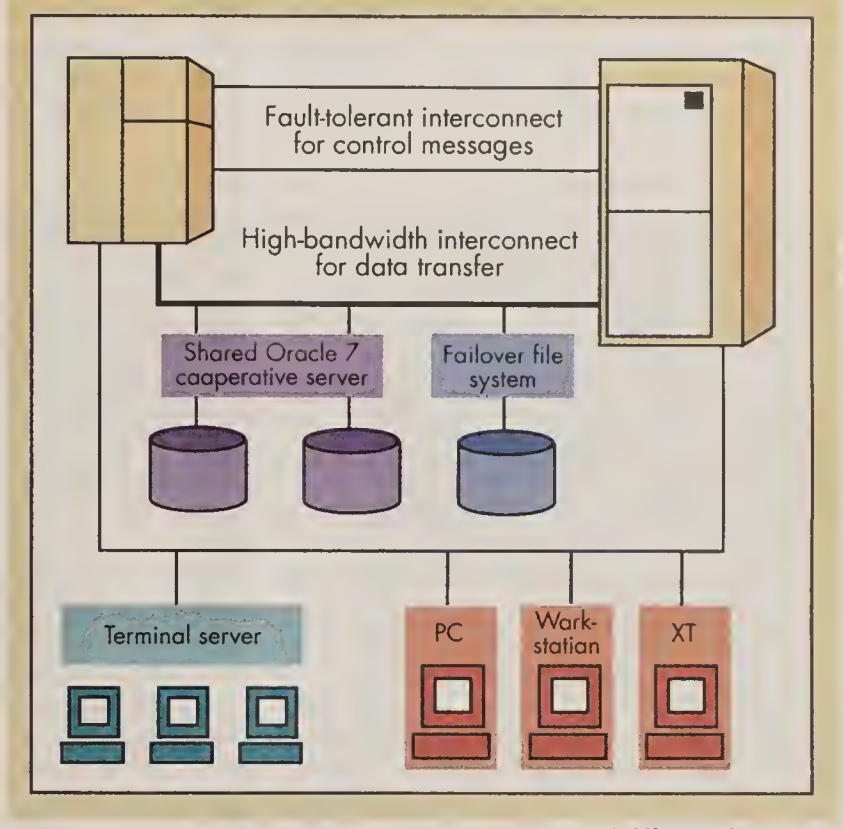
Byer has two high-end Sequent Symmetry 2000 Model 750s. One machine runs the Oracle Financials application package, while the other runs custom Oracle applications. Higgins said he wants both kinds of applications to update the same single-image Oracle 7 database, spread across two machines. To date, Byer programmers have used workarounds to post updates to two databases.

The two Unix vendors are in a near dead heat to get their parallel server software to customers. "We expect Pyramid to have it first and Sequent to have it second," said David Card, director of systems research at International Data Corp. in Mountain View, Calif.

In time, software such as Oracle's parallel server might change information systems managers' perception of Unix as unsuitable for OLTP, some users said. "It's now cheaper to rewrite your legacy system and put it on a Unix box than to leave it on your mainframe," said Michael Corey, president of the International Oracle Users Group. "Up to now the missing piece has been the uptime."

Doing things in sequence

Sequent's parallel server approach provides near fault tolerance by linking multiple computers to a shared disk



CW Chart: Stephanie Faucher

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Software AG making move to client/server

BY GARY H. ANTHES
CW STAFF

PHOENIX — Information systems executives at a conference here said they are pleased with Software AG of North America, Inc.'s strategy for deploying its mainframe products to client/server environments and are happy with the products the company has rolled out so far.

However, mainframe users attending the company's second annual Strategic Choices Executive Conference said Software AG has further to go before it can move comfortably and easily into the distributed systems world.

Lechmere, the Woburn, Mass.-based retail chain, is phasing out its aging IBM Series/1 minicomputers in favor of Unix-based RISC System/6000s, which have been installed in its 23 New England stores.

Lechmere will rewrite inventory and merchandising applications in Natural for AIX, Software AG's fourth-generation language for RS/6000s that was announced in April.

According to Lou Kleynen, Lechmere's vice president of company IS, the move will make it much easier to write and maintain applications, which had been written in an assemblerlike language for the Series/1. Moving development to the Unix boxes will also free up some 25% of the company's IBM 3090 Model 200E, where the development work is now done.

Kleynen said he is awaiting the arrival of several Software AG tools needed to completely execute Lechmere's strategy: Transfer, a utility for moving mainframe Natural programs to AIX; an AIX version of Natural Construct, the mainframe application generator; an AIX version of the Predict repository; and AIX security and performance tools.

At its fingertips

Everything Lechmere needs is in the works, said David A. MacSwain, marketing vice president at Software AG. He said Transfer will be available early next year, Construct and Predict for AIX by year's end and the security and performance tools in nine to 12 months.

"The [Unix] product line is still evolving, and some bugs need to be worked out," Kleynen said. "Software AG has people who know AIX and people who know Natural, but they aren't experts yet in the Natural AIX product set."

However, he called Software AG "very responsive" and said he is sure the company will deliver on its promises.

Software AG President Michael J. King said the company will give its Unix customers the same service that its traditional mainframe customers enjoy, even though profit margins are much thinner on the desktop than in the glasshouse. King said that repositioning the 23-year-old mainframe software firm for client/server computing is "a very tricky piece of management."

Software AG began shipping Unix versions of its flagship products — Natural, Adabas and Net-Work — in April. They are at the heart of the company's distributed computing strategy, called Entire, for offering a consistent, homogeneous environment for developing software to be deployed in networks of heterogeneous systems.

Dole Fresh Vegetables Co. in Salinas, Calif., a division of Dole Foods, Inc., will use Entire products in its replacement of an IBM 4381 mainframe running MVS/SP with a Hewlett-Packard Co. HP 9000 running HP/UX Unix.

Software AG's King: *Repositioning the company to client/server is 'a very tricky piece of management'*

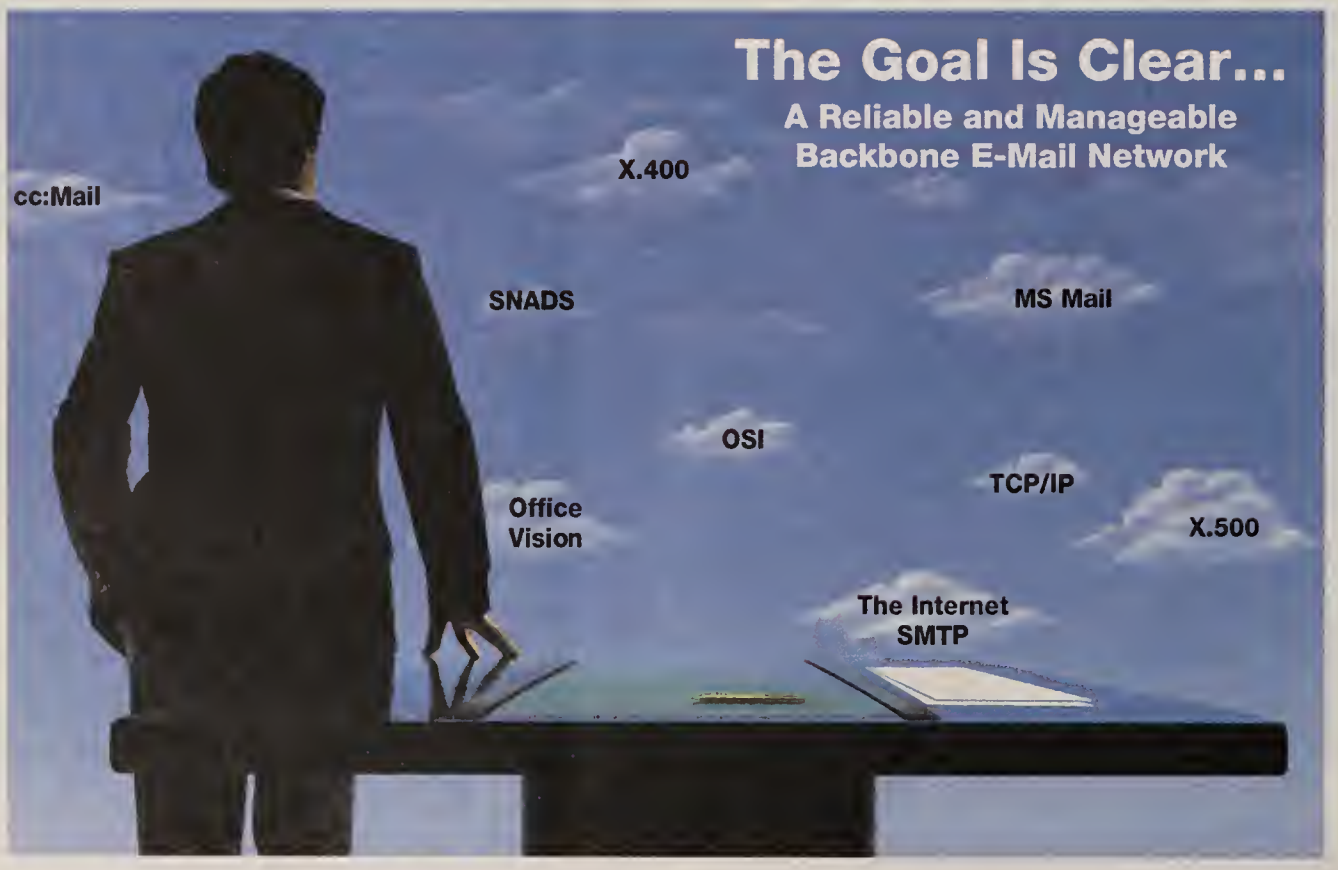
David Alexander, information technology manager at Dole, said data is periodically downloaded from the mainframe to a standalone, DOS-based local-area network via a cumbersome VTAM translation process. But eventually the Entire architecture will allow users on the LAN to transparently access files on the HP 9000 and other HP/UX-based servers at diverse locations.

He said he hopes the move to HP will knock $300,000 off his $2 million annual IS costs.

But Alexander expressed some concern over Software AG's current reach into the Unix world. "I don't have a lot of confidence yet in their ability to support my Unix environment. There's not a support team set up yet."

However, analysts said the company will deliver, albeit cautiously. "Technologically, they are very sound," said Robert Tasker, a vice president at International Data Corp. in Framingham, Mass.

"Entire provides the most comprehensive solution put forward for enterprisewide production computing," according to the Boston-based Aberdeen Group in a recent report. "The challenge ... will be to deliver the functional capabilities described by the Entire product set."



Free Educational Seminar Locations and Dates:

Albuquerque, NM
Hyatt Regency
Wednesday, October 28

Atlanta, GA
Atlanta Marriott Marquis
Tuesday, October 6

Boston, MA
The Westin Hotel
Tuesday, November 17

Chicago, IL
Chicago Marriott Downtown
Thursday, September 17

Cincinnati, OH
Marriott
Tuesday, December 1

Cleveland, OH
Airport Marriott
Thursday, December 3

Dallas, TX
Marriott Park Central
Tuesday, October 13

Denver, CO
Denver Marriott West
Thursday, September 24

Detroit, MI
Hyatt Regency
Wednesday, November 4

Houston, TX
Hyatt Regency
Wednesday, October 14

Indianapolis, IN
Marriott Courtyard
Wednesday, October 14

Los Angeles, CA
Westin Bonaventure
Tuesday, September 22

Minneapolis, MN
Minneapolis Airport Marriott
Thursday, October 22

New York, NY
Helmsley Palace
Wednesday, September 30

Orange County, CA
Irvine Hyatt Regency
Thursday, October 8

Pittsburgh, PA
Hilton Hotel & Towers
Thursday, October 22

Princeton, NJ
Hyatt Regency
Tuesday, October 13

San Francisco, CA
Sheraton Palace
Thursday, September 24

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Tuesday, September 29

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How to know when to purchase RAID

BY KIM S. NASH
CW STAFF

You just downsized, rightsized or otherwise added an IBM Application System/400 to your happy home. Now you have to choose which kind of storage products should house data processed by the new midrange system: direct-access storage devices (DASD) or redundant arrays of inexpensive disks (RAID).

IBM's 9337 subsystem, a just-unveiled product based on RAID technology, complicates the decision for midrange users. The heat is on in the RAID arena, with Storage Technology Corp. and IPL Systems, Inc., among others, having at least announced comparable devices.

And let us not forget that each of these vendors, in addition to EMC Corp., XL/Datacomp, Inc. and others, also offers traditional DASD setups.

Shop around

Although several topics should be addressed before laying out cash for storage products, answers come quickly after a little analysis, users and consultants said. They advised prospective buyers to do the following:

• **Uncover vendor incest.** Knowing which companies resell so-called competitors' products can yield added insight into pricing strategies. Such knowledge helped Art Hobson cut a better disk drive deal four months ago.

Western Folder Distribution Co., a travel brochure distributor in Itaska, Ill., set out last April to buy eight drives to go with the company's new AS/400 Model E45. Uninterested in RAID, Hobson, director of data processing, elected not to wait for IBM's impending 9337 announcement and requested the 9336 model directly from IBM.

About that time, IPL and EMC announced systems featuring "hot spares," extra drives that automatically shift into gear when another one fails. The concept prompted Hobson to shop around. In the process, he found that XL/Datacomp resells IPL drives, while Decision Data Corp. peddles EMC products.

"IPL gave us the best price first off, but then we kept going back and forth with all of them for two weeks" until Western Folder ended up getting 10 drives for the original price of eight, Hobson said.

Ironically, XL/Datacomp ultimately quoted Hobson a better price on IPL drives than did IPL itself. Manufacturers can only go so low before they undercut their own resellers, Hobson pointed out, adding that "it's almost always better to check out what deals the reseller offers."

• **Be real.** Realistically assess whether the data your shop shuttles around would actually cause business problems if users could not get to it for a few hours during unforeseen downtime.

"You want to believe you need all your data all the time, but that is not the case for a large majority of businesses," said Jim Porter, an analyst at Disk/Trend, Inc., a market research firm in Mountain View, Calif.

That means most users probably do not need RAID devices. In fact, buy them "only if you're an airplane reservation system or some other specialized situation where your application positively can't poop out ever," Porter advised.

For shops already running fault-tolerant processors such as those from Tandem Computers, Inc., Stratus Computer, Inc. or IBM, RAID is recommended. Most other shops could live without it.

• **Consider the savings.** Companies doing disk mirroring — completely duplicating disk drive configurations — could save money by buying RAID, said James Bailey, senior vice president at Massachusetts Financial Service Center, Inc. in Boston.

Mirroring means buying two disks for each one that is actually used in daily operations. The second acts as a backup. "That's expensive," Bailey said.

"Mirroring might be slightly more reliable, but RAID-5 is nearly there," said David Andrews, an analyst at ADM Consulting, Inc. in Cheshire, Conn. He said he expects demand for the 9337 RAID product to "swamp" IBM from people who now mirror.

The RAID market as a whole is heating up. IPL announced a subsystem that rivals IBM's 9337, and Data General Corp. introduced RAID for other vendors' Unix machines.

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Comdisco upgrades disaster support

Revamp costs $47 million; vendor claims it alone supports high-end IBM mainframes

BY PAUL GILLIN
CW STAFF

CHICAGO — In a bid for more big iron business, Comdisco Disaster Recovery Services has installed a top-of-the-line IBM Enterprise System/9000 Model 900 mainframe as part of a $47 million upgrade of its hardware facilities.

With the move, Comdisco now claims to be the only disaster recovery vendor to provide disaster support for the high end of the IBM mainframe line.

The upgrade brings the Carlstadt, N.J., facility's processing power to 345 million instructions per second and its disk storage capacity to 2.5T bytes.

According to Comdisco Disaster Recovery Executive Vice President Douglas Cogswell, the move is intended to make a statement. "The disaster recovery industry has been knocked for being late with new technology. This is on the leading edge," he said.

Comdisco customer Sal DiBari, vice president of data security and disaster recovery services at Chemical Bank, Inc., said the move is key to a big customer like him.

"It's important that our vendor keep pace with technology, and our needs in the future will lean toward the vendor who can do that," he said. Chemical Bank has multiple ES/9000s backed up by Comdisco.

Comdisco is also upgrading its IBM Application System/400 capabilities at recovery sites in North Bergen, N.J., Toronto and Wood Dale, Ill. And it will roll a Digital Equipment Corp. VAX 6620 into its North Bergen facility later this fall. The company is also investing $18 million in technology upgrades in Europe.

Keep on growing

Comdisco said it hopes the moves will further fuel a growth rate that topped 30% last year. A crop of recent disasters — including April's Chicago flood and Hurricane Andrew — have helped boost business for Comdisco. The company handled 18 recoveries in Chicago and nine in Miami last month.

Revenue should top $200 million this year, according to Cogswell. The company operates five data centers in the U.S.

Comdisco has also installed $2 million worth of local-area network technology in four work-area recovery centers.

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IN BRIEF

DEC signs GSA deal

■ **Digital Equipment Corp.** recently concluded negotiations for its first General Services Administration microcomputer products and services contract. The contract allows DEC to sell its Desktop Direct products and multivendor services at a discount to the federal government.

■ New digs for **Dataguard Recovery Services**: The Louisville, Ky., disaster recovery vendor has completed a 28,000-sq-ft recovery center and headquarters.

Of the total, 21,000 sq ft is dedicated to disaster recovery with a 15,500-sq-ft hot site, a 3,500-sq-ft cold site, a "dark room" processor and disk storage room, a communications network control center and fully equipped customer support areas.

■ The **Transaction Processing Performance Council** (TPC) is close to approving the third in its series of benchmarks that measure the performance of transaction processing systems.

TPC-C, an on-line transaction processing benchmark, was designed to provide consistent comparisons regardless of the hardware or operating environment, according to the TPC.

■ **GE Medical Systems**, a Milwaukee developer of diagnostic imaging systems, has signed a five-year software and services contract with Structural Dynamics Research Corp.

Under the agreement, Structural Dynamics will act as the global supplier of mechanical design automation software for GE Medical Systems through 1997.

The size of the contract was not disclosed. However, according to a Structural Dynamics press release, orders from GE Medical Systems for Structural Dynamics I-deas software is expected to total several million dollars.

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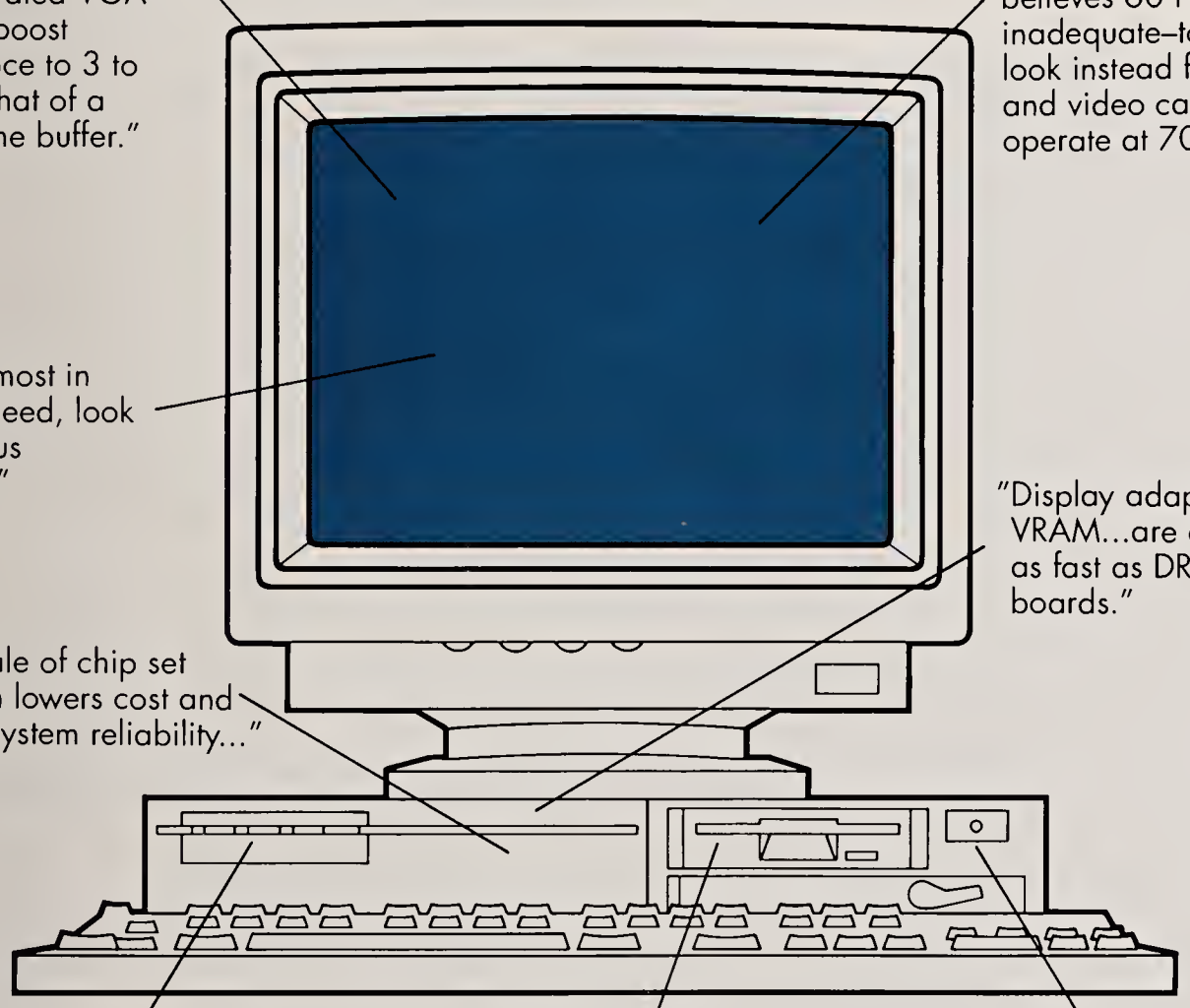

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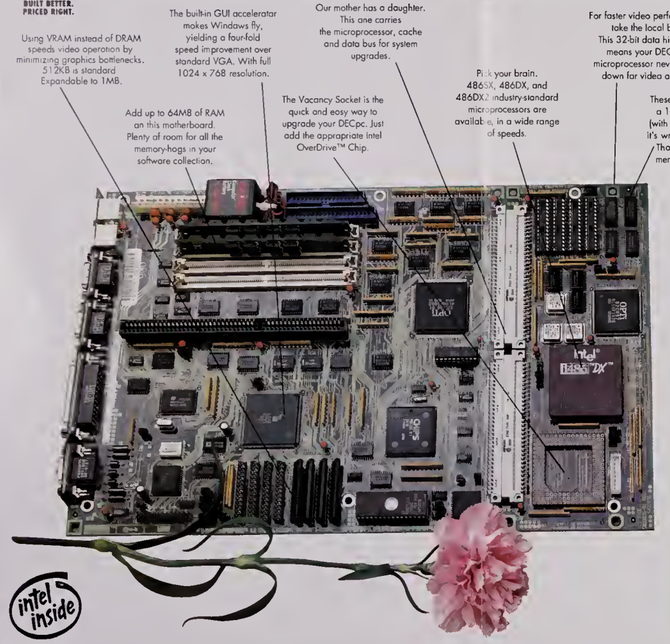

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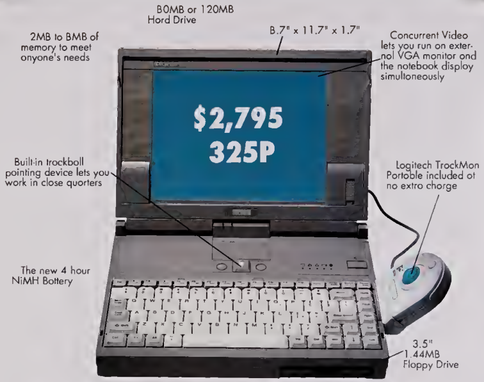

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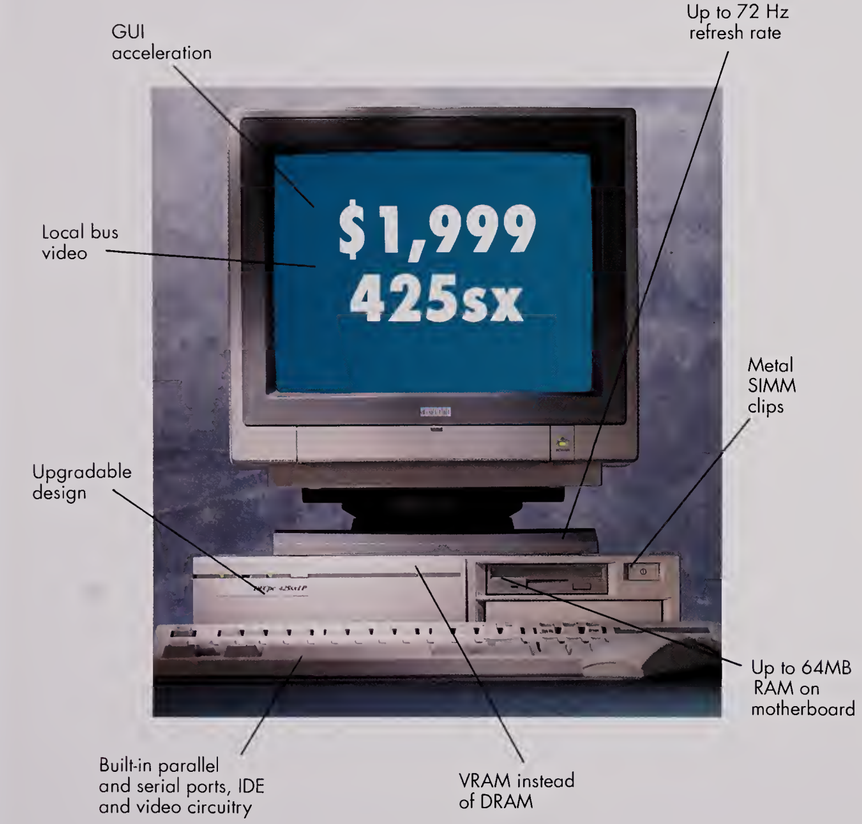

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DECjet 1000					69 49
Toshiba ExpressWriter 201	N/A†				18

Worst Best

IBM Emulation

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Canon BJ-10ex Bubble Jet Printer	N/A†				42
Citizen PN4B Notebook Printer	N/A†				24
DECjet 1000					65 49
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N/A† Not applicable. This printer does not operate in draft mode
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NEW PRODUCTS

Software application packages

QDB Solutions, Inc. has released QDB/Analyze.

According to the company, QDB/Analyze is a software product designed for improving the quality and integrity of information stored in corporate databases. It targets problems such as incorrect billing, cost overruns and product recalls.

The product is a data quality management tool that uses data modeling and relational database design concepts. A semantic model of the data quality specifications is maintained that enables data quality to be measured at the record, field and database levels. QDB/Analyze runs under Microsoft Corp.'s Windows 3.1 or on an IBM-compatible 486 or 386 personal computer, according to the company.

Pricing starts at $30,000 for a single license.

QDB Solutions
3 Cambridge Center
Cambridge, Mass. 02142
(617) 577-9205

Cincom Systems, Inc. has released Mantis 2.4, a product designed to help users create applications that run on Digital Equipment Corp.'s VAX/VMS architecture.

Mantis 2.4 offers a set of tools for fast system development, interactive prototyping and refinement, system testing and implementation, the company reported. A new Screen Repaint Optimization feature executes programs faster, and the Mantis Options compiler provides default attributes.

The product has a Universal Export Facility that simplifies porting Mantis applications from one platform to another.

Prices range from $8,600 to $116,000.

Cincom Systems
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Cincinnati, Ohio 45211
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California Software Products, Inc. has introduced Release 1.2 of its RPG/400 software system, Baby/4XX.

According to the company, Baby/4XX was designed to downsize Application System/400 native code from a midrange system to a personal computer where it can be used in multiuser or single-user mode or recompiled and used on a network.

This release includes subfile support, external printer support and enhanced development tools. Baby/4XX runs on both the AS/400 and the PC. Under OS/2, the product provides the capability to integrate AS/400 applications with Microsoft Corp. Windows, DOS and OS/2 software such as spreadsheets, word processors and databases.

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Systems Center, Inc. and Tangram Systems Corp. have announced Tangram's AM:PM software distribution product.

AM:PM offers host-controlled software solutions for users of Novell, Inc. and OS/2 local-area networks, DOS, OS/2 and Apple Computer, Inc. Macintosh workstations in the Systems Network Architecture networking environment, the company reported.

AM:PM transports software among unattended servers and workstations and IBM MVS mainframes. Remote data management, collection for product applications and data distribution is provided.

Prices range from $75,000 to $200,000.

Systems Center
1800 Alexander Bell Drive
Reston, Va. 22091
(703) 264-8000

Utilities

BMC Software, Inc. has introduced LoadPlus Version 1.3, a DB2 load utility.

According to the company, this version loads DB2 up to six times faster than the load utility provided with DB2 Version 2.3 and requires approximately one-fourth the CPU time.

Users can access data up to 12 times longer than with the DB2 utility and can use LoadPlus Version 1.3 to replace all of the data in a table. Ease of use and new features that improve flexibility have been added.

LoadPlus Version 1.3 prices start at $15,000.

BMC Software
1 Sugar Creek Center Blvd.
Sugar Land, Texas 77487
(713) 240-8800

System software

Prism Solutions, Inc. has introduced Prism Warehouse Manager.

According to the company, Prism Warehouse Manager is the first software product created to automate the design, development and maintenance of a data warehouse environment. The product automatically generates programs and control statements to transport information from a variety of sources into the data warehouse.

To load the relational database, Prism Warehouse Manager supplies mainframe-executed Cobol programs.

Prices range between $80,000 and $170,000.

Prism Solutions
440 Oakmead Pkwy.
Sunnyvale, Calif. 94086
(408) 481-0240

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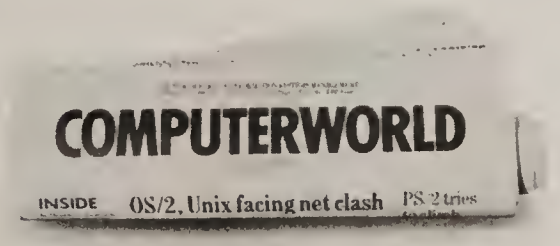

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Management, not tools, steals conference spotlight

BY GARRY RAY
CW STAFF

The recent Software Development Fall '92 may not have been a barnburner of snazzy new development tools, but in the era of "total quality," that may have been for the best.

While this mixed gathering of approximately 2,000 programmers and development managers was clearly interested in staying at the head of the technology curve, it also sat transfixed through two days of management seminars on topics such as "Growing a Successful Change Agent," "The Learning Organization: What Neural Networks Teach Us about Management" and "Coding, Cowboys and Software Sages."

The seminars were clearly aimed away from development tools, methodologies and new techniques and toward broader management issues such as team- and consensus-building.

Developers grappled over a perennial issue of software design: whether current application bottlenecks and quality concerns could be solved through new tools and methodologies or through changes in how software projects are managed.

In this corner

In one camp were those who dismissed the idea that new programming techniques would solve today's problems. "I don't believe in magic solutions," said Chris York, a software project engineer at Cummins Electronics Co. in Columbus, Ind. "A lot of people are talking about object-oriented software, but it's just the latest [trend]," he observed.

Development methodologies and models also came under attack from Richard Cohen, a consultant and developer based in Silver Spring, Md.

Cohen, author of the MacBubbles computer-aided software engineering (CASE) tool for the Apple Computer, Inc. Macintosh, said, "If you think too much about the model and not enough about the problem at hand, the model is a bad model. The same thing goes for tools."

That idea was echoed by conference chairman Larry Constantine, an authority on software development and software teams.

"There's a shift in the field to the recognition that technology is not going to solve all of the problems," he said. More effective than technology solutions, according to Constantine, is that managers make small adjustments in their methods, such as making "visible," or explicit, any existing development processes; adding "professional critics" to all software teams; and making sure that team leaders are neutral in the way they accept feedback and problem reports from staff members.

"There are small steps that any company can take to make a difference in quality, but people issues are the key component to reduced software defects and increased productivity," Constantine said.

Familiar problem

Other attendees were nonplussed about the emphasis placed on management issues. "There aren't so many [issues] as people believe," said Forrest Johnson, senior vice president at UAI Technologies, Inc. in Research Triangle Park, N.C.

However, Johnson, who has a staff of more than 50 developers at the financial services software firm, countered that "the management issues that exist [in software development] aren't that much different from any other job."

Although he attended a number of management seminars at the conference, Johnson was mainly brushing up on object-oriented programming, Microsoft Corp.'s Windows New Technology and CASE tools.

Conversely, some who came for a full serving of technology were sated by the management seminars.

"I came up through the ranks as a programmer," said Stephen Scott, a manager at SRC Systems, Inc., a development house in Bala Cynwyd, Pa. "So to get the management seminars in this context, where the issues and examples are relevant to [developers], has been helpful."

Powersoft teams up with LBMS, Bachman

BY KIM S. NASH
CW STAFF

BURLINGTON, Mass. — Powersoft Corp. is on the move. The privately held company, based here, recently closed several joint development and/or marketing deals with computer-aided software engineering (CASE) firms, including Houston-based LBMS, Inc. and Bachman Information Systems, Inc., also based here.

After selling off its last shrink-wrapped software package earlier this year, Powersoft is now focusing solely on PowerBuilder, its client/server application development tool. Powersoft has stated no plans to become a full development life-cycle vendor but has teamed up with CASE vendors.

Each party benefits from the deals: Powersoft supplies graphical tools missing from other tool sets and gains sales channels when these vendors resell PowerBuilder. The trick will be getting PowerBuilder to work smoothly with workbenches from other vendors.

Patience is a virtue

Bachman and LBMS users concerned about that integration will have to wait a few months to judge it. Neither company has set an official release date for PowerBuilder-enabled tools, but the products are expected to be out in early to mid-1993.

Bachman's deal with Powersoft is part of a larger scheme to get past its re-engineering reputation. Company officials touted Model Driven Development (MDD), a strategy for full life-cycle CASE based on reusable models created by a user to represent different business functions.

"The goal is to be able to find and redeploy work you've done before," explained Chris Sole, Bachman's director of strategic marketing.

PowerBuilder, which Bachman plans to sell and support, supplies a means of generating and saving graphical front ends and full-fledged applications — a piece missing from Bachman's tool set.

Part of the plan

Also part of MDD is Bachman's intention to develop design tools for popular relational database management systems, starting with SQL Server from Sybase, Inc. and Microsoft Corp.

Ultimately, Bachman plans to provide tools for users to generate applications for the platform of their choice, Sole said. But that has not happened yet.

A problem with current so-called client/server solutions is that they address a limited number of operating environments. For example, PowerBuilder generates Microsoft Windows-based systems rather than Unix or IBM OS/2.

Programmer nirvana would be an integrated set of tools that could produce applications for various platforms. Powersoft's latest pacts push Bachman and LBMS closer to that end, but some traditional CASE vendors have already dipped their toes in the water.

Some KnowledgeWare, Inc. users, for instance, are building cooperative applications for combination OS/2 and MVS setups.

For its part, LBMS plans to link PowerBuilder into Systems Engineer, a full life-cycle tool set.

LBMS and Powersoft made an agreement to sell each other's products.

Set a place

The players bring different but complementary tools to the table

Powersoft: PowerBuilder, a Microsoft Corp. Windows-based development tool for building graphical applications and interfaces.

LBMS: Systems Engineer, a CASE workbench that includes a LAN-based repository.

Bachman: Namesake workbench, a tool set that does forward and re-engineering.

IDE unveils development tool for Unix workstations

BY GARRY RAY
CW STAFF

NEW YORK — A new development tool for Unix workstations will make it easier to create and reuse object-oriented software components for C++ application programming.

Object Oriented Structured Design/C++ (OOSD/C++), announced by San Francisco-based Interactive Development Environments, Inc. (IDE) at last week's Unix Expo, combines a language-sensitive graphical programming editor, an annotation facility, a variety of tools to check the completeness and consistency of an object-oriented design diagram and a C++ code generator to automate the design of user interfaces.

OOSD/C++ was designed to work with IDE's Software through Pictures computer-aided software engineering (CASE) development environment, according to a company spokesman.

At the core of OOSD/C++ is a graphical editor that allows developers to visually construct object-oriented software designs. Integrated with IDE's CASE environment and repository are resulting designs that can include public and private classes, templates, global and local scoping and single and multiple inheritance. OOSD/C++ can be integrated with Centerline Software, Inc.'s ObjectCenter programming environment, allowing developers to interactively switch between OOSD/C++ designs and C++ code.

Design retrieval

Included with OOSD/C++ is a reuse browser that provides access to multiple design libraries, company officials said. Using the browser, developers can retrieve one or more designs for modification or extension. After browsing and selecting designs, OOSD/C++ automatically redraws the designs in its graphical editor.

Separately, IDE announced a training, consulting and development-assistance program for OOSD/C++ customers. Called Success Package for C++, the program combines a number of on-site and telephone support services to assist customers in launching their first C++ development project.

OOSD/C++, available immediately for Sun Microsystems, Inc. SPARCstations, is priced at $75,000 for five users, including the Success Package for C++. Subsequent versions to be released this year will support IBM RISC System/6000 and Hewlett-Packard Co. HP 9000 Series 700 workstations.

Champs tosses development tool for Rdb into ring

BY MELINDA-CAROL BALLOU
CW STAFF

CRYSTAL RIVER, Fla. — Champs Software, Inc. recently announced the release of Champs/CASE, a software development tool for rapid application development in conjunction with Digital Equipment Corp.'s Rdb/VMS.

Champs/CASE lets developers move DEC RMS flat files or Cobol-based applications to Rdb, DECforms' Interactive Forms Definition Language (IFDL) and ANSI-compliant C code, officials said, by generating SQL or C code.

"A main target for this product is people who want to build transaction-oriented systems that do not need to make use of DEC's [Application Control Management System] transaction-processing monitors," said Terry Poupart, director of research and development at Champs. "Many people built products with RMS, for instance, and need a tool to migrate to Rdb, DECforms or standard C.

"To make a transition, you have to be an expert in all three — SQL, IFDL and C — before you can even begin. We take care of that," he added.

Champs/CASE offers its own repository and Rapid Development Language and produces C programs with embedded SQL, he said.

The product is divided into three modules. The first is a Dictionary Development and Maintenance Module, which defines and maintains a database schema definition; an Application Development and Maintenance Module, which generates batch and forms-based application programs; and an Object Dependency Tracking Module, which analyzes the use and relationships of application objects.

Champs/CASE can also be integrated with DEC's DECforms, which allows developers to create and maintain form panels that can then be invoked by Champs/CASE applications.

Champs/CASE is scheduled to begin shipping in January 1993, the company said. Pricing will range from $9,000 to $60,000, based on CPU.

IN BRIEF

TeamNet runs HP

■ **TeamOne Systems, Inc.** recently announced that the TeamNet data and configuration management system now runs on **Hewlett-Packard Co.**'s Apollo 9000 Series 400 and Series 700 workstations. TeamNet tracks file changes made by any tool that runs on any platform on a Network File System-based network, according to the firm.

■ **The Virginia Center of Excellence for Software Reuse and Technology Transfer** in Herndon, Va., received a $7.2 million contract from the Defense Advanced Research Projects Agency for research in reusable architectures and components, integration of reuse technology into organizations, methodologies to encourage reuse in the software industry and methodologies for determining when reuse is cost-effective.

■ **Intersolv, Inc.** in Rockville, Md., has begun shipping APS 2.2, an enhanced code generator that produces code for client/server applications. Beta-tested at 16 sites, APS 2.2, which is priced at $9,500, can target code for IBM mainframes, Application System/400s or OS/2 systems.

21 MEGABYTE*

New 3M Floptical® diskettes may look like ordinary 3.5-inch diskettes, but they offer over 28 times the capacity*—at a low system and media cost.

As the world's largest manufacturer of media, 3M is a leader in producing the new Floptical diskette using a unique combination of magnetic recording and optical servo track technology. Optical tracks are engraved on the barium-ferrite media surface so the drive can read more data more precisely (1,245 tracks per inch vs. 135 on standard floppies). This not only gives you increased capacity but also improved reliability and performance.

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*Capacity comparison based on nominal capacity between a 1MB formatted diskette and a formatted Floptical diskette. Products noted require compatible drives. Actual storage capacity may vary depending on drive and formatting requirements. "Magnus" is a trademark of 3M. "Floptical" is a registered trademark of INSITE Peripherals. ©1992 3M.

Cognos eases SQL query process across RDBMSs

BY MELINDA-CAROL BALLOU
CW STAFF

BURLINGTON, Mass. — Cognos, Inc. has announced Impromptu 1.1, a desktop SQL query tool for Microsoft Corp.'s Windows that offers cache mode and local snapshot support for increased performance and ease of operation across platforms and relational database management systems.

Impromptu uses a Microsoft Windows interface to allow users to perform complex queries across SQL databases without having to understand SQL, the RDBMS structure or network navigation. This version offers support for Digital Equipment Corp.'s Rdb, Oracle Corp.'s RDBMS, Sybase, Inc.'s SQL Server, Microsoft's SQL Server, Borland International, Inc.'s InterBase and Hewlett-Packard Co.'s Allbase/SQL, as well as SQL Net, Transmission Control Protocol/Internet Protocol, DEC Pathworks, HP NS3000 and serial connections for networking.

Impromptu offers a Query Bar that does SQL query operations such as sorting, grouping, calculating minimum average and maximum values, totals, subtotals and averages. The product also handles network navigation and database access, which eliminates complex sign-on procedures, officials said. Users point and click on items of interest and the SQL query syntax is automatically generated and sent to the host.

Traffic reduction

The cache mode feature available with this release lets users bring data down to the local personal computer and then perform further queries without having to requery the database, thereby reducing database processing and network traffic. If the required data is not in the local cache, Impromptu will query the database. Other tools require separate database queries with each iteration, according to Cognos.

"One of the big issues users face is network traffic and a drain on systems resources," a Cognos spokesman said. "Cache mode lets them cut down on that significantly."

Local snapshots let users save queries on the PC for later use, giving them access to data without requiring that they be connected to the database.

Satisfied user

Miglautsch Marketing, a direct marketing and catalog sales company based in Milwaukee, is using Impromptu in conjunction with Borland's InterBase RDBMS, The Santa Cruz Operation's SCO Unix and VAX/VMS platforms.

"We've found Impromptu to be really helpful for initial data pulls, for trying to find out what's in a file and for marketing people because it's all point and click," said John Miglautsch, company president. "As a query tool, it's exceptional. Where it isn't quite as powerful is in building real applications, but it is primarily a query tool. It has a feature which limits the number of records that come down, which is helpful for the largest databases and for tailoring joins so that users don't have to figure out what they ought to be."

Miglautsch added that with data conversions and transfers of more than 100,000 records, Impromptu "isn't as fast as you might like it to be," so for production applications, users might require a different option.

Impromptu 1.1 is available immediately and costs $595.

128 MEGABYTE

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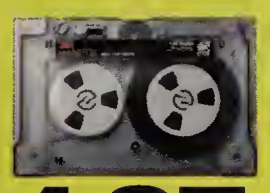

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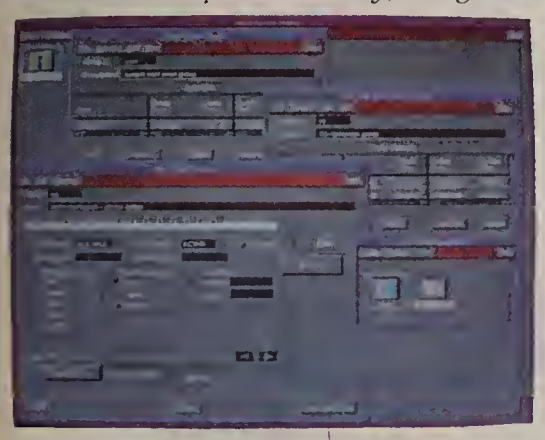

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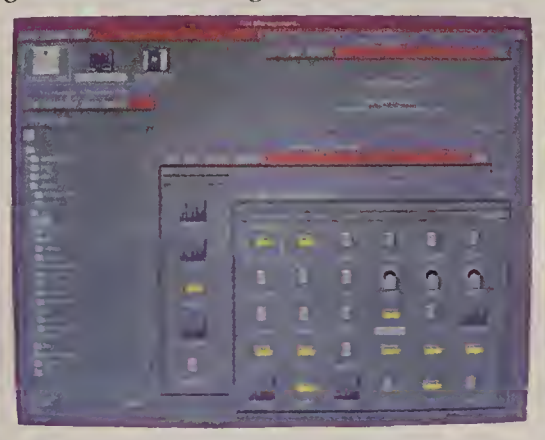

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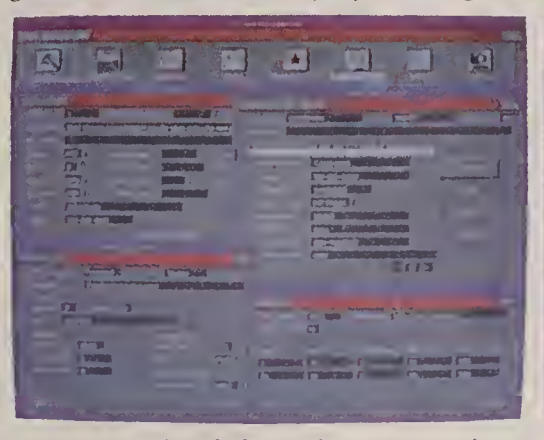

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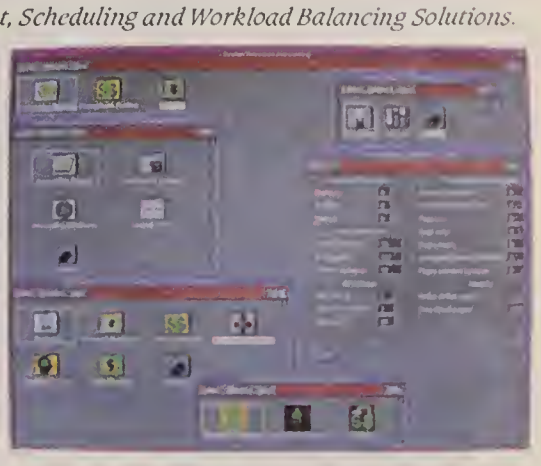

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NEW PRODUCTS

Application development tools

Financial Modeling Specialists, Inc. and Borland International, Inc. have released Version 3.4 of ParaTrak, a Paradox script documentation program.

ParaTrak 3.4 was designed for use with Paradox 4.0, Borland's personal computer relational database. ParaTrak 3.4 can analyze code developed by users customizing Paradox 4.0, which helps in tracking global variables and discovering potential errors.

The product runs in Paradox and uses the Paradox Engine and Turbo Pascal to produce documentation in Paradox tables. Users can control the documentation by performing tasks such as modifying default reports or adding their own and sorting and querying for specific data.

ParaTrak 3.4 costs $375.

Financial Modeling Specialists
Suite 410
8027 Leesburg Pike
Vienna, Va. 22182
(703) 356-4700

Acucobol, Inc. has started shipping AcuView.

According to the company, Acu-View is the computer industry's first integrated business quality graphics package for Cobol.

Users can incorporate variations of five categories of graphs — pie, line, bar, table and word charts — into their Acucobol-85 applications and develop customized charts choosing selections from a catalog of more than 100 standard chart designs.

Prices for AcuView start at $979.

Acucobol
Suite 201
7950 Silverton Ave.
San Diego, Calif. 92126
(619) 689-7220

Wind River Systems, Inc. has introduced MicroWorks, a software development environment designed to let users write, test, load, debug and run applications for high-volume embedded systems.

According to the company, MicroWorks is a fully bundled development and runtime environment that executes the entire software development process. For customized applications, the product combines development tools and a micro kernel-based operating system.

A porting guide of documentation and software templates is included, and MicroWorks supports host development on Sun Microsystems, Inc. SPARCstations and Hewlett-Packard Co. 900/300, 400 and 700 workstations.

MicroWorks costs $12,500 per project license.

Wind River Systems
1010 Atlantic Ave.
Alameda, Calif. 94501
(510) 748-4100

Compilers

Software Engineering Associates has released Portable Basic, a compiler for Sun Microsystems, Inc. workstations.

The product is compatible with Microsoft Corp.'s GW-Basic and runs on Sun 3 and Sun 4 workstations running SunOS 4.1. The compiler provides a migration path from personal computers to Sun workstations. Users can write applications and utilities as well as graphical displays, numeric programs and simple text filters. Color graphics capabilities are included to draw lines, rectangles, points, ellipses, arcs and circles, and text can be printed to the screen in multiple fonts, the company reported.

Prices start at $600 for a single CPU license on Sun 4 computers.

Software Engineering Associates
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Merrimac, N.H. 03054
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THE data pollution PROBLEM

Missing, wrong and otherwise rotten data costs U.S. firms billions each year. Find and fix, experts advise.

Jon Nickson

Connecticut Mutual's Shelby: *'We've been blind to the fact that files live longer than the programs we write to produce them'*

BY BOB KNIGHT

When Lamar Alexander took over the job of U.S. education secretary, his top goals included cleaning up a polluted loan database so that student borrowers would not continue to get a free ride.

According to a General Accounting Office report, taxpayers paid $2 billion because information provided by the nation's banks on defaulters hadn't been entered properly into a centralized database at the Department of Education.

The result? Deadbeat students continued to get loan renewals, while applications from deserving students were rejected. Today, Alexander and the department are still wrestling with the problem.

Knight is a Chicago-based free-lance writer.

Sadly, the problem of inaccurate, corrupt data isn't confined to the government. Many corporations are also discovering anew that the garbage-in, garbage-out bugaboo is back — in a big way.

Almost two-thirds of 501 medium and large companies recently surveyed by *Computerworld* reported problems resulting from inaccurate, outdated or missing data.

Although companies tend to be silent about the issue, word of damage has seeped out from Saloman Brothers, Inc., TRW, Inc., Prudential Securities, Inc., Trump's Castle Casino, General Accident Insurance and others.

Experts blame the rise in problems caused by dirty data to downsizing, an increase in data warehouses, re-engineered legacy systems, client/server networks and increased user access. Those factors, combined with a lack of action on the part of information systems groups, means the garbage-in, garbage-out syndrome is more pervasive — and far more dangerous — than ever.

"Businesses are becoming more and more dependent on large data stores to support things like sales and manufacturing," says Mark Hansen, president of QDB Solutions, Inc. The Cambridge, Mass., software consultancy applies Total Quality Management principles to on-line data.

The litany of consequences ranges from improper billing to cost overruns, delivery delays or errors, product recalls and improper reporting of regulatory information. With a recent rise in downsizing, some analysts predict the problem is likely to get worse.

Richard Finkelstein, president of Performance Computing, Inc. in Chicago, says one of the biggest challenges occurs when data is strung out onto a local-area network of users who may not be clear on the concept of data integrity.

"While mainframe software might have holes in the dam, PC software doesn't have a dam at all," Finkelstein says. "There is absolutely no protection there because, to a large extent, programmers and end users of the PC software products do not recognize the sources of the corruption. They don't understand the issues because the issues aren't being discussed."

One reason the issues are hushed up is that some companies are embarrassed. Others fear the legal and monetary repercussions of problems that can result from incorrect data.

"For the past 40 years, IS organizations have spent all their time figuring out how to move and store data better and faster without spending any time trying to improve the quality of data," Hansen says.

It's ironic, he notes, that many companies that embrace Total Quality Management have thus far ignored the data that underlies many critical applications.

main points

- Almost two-thirds of the 501 companies polled report problems with poor-quality data.
- Most companies remain close-mouthed.
- Fixes include more training, replacing problem equipment, using specialized equipment and forming task forces.

Tales of hapless organizations that have suffered from ignoring the issue routinely make the rounds in IS and consulting circles. Following are two of the more recent stories.

In 1990, a major New York securities broker lost more than $200 million when its employees entered incomplete data into a new risk management system the firm was building. As a result, the firm missed a big trading opportunity when the report failed to show that a key transaction had been made.

Another example is a major New York bank that rejected a state's verbally approved $10 million loan appli-

Continued on page 83

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The data pollution problem

CONTINUED FROM PAGE 81

cation because the bank had no record of the state's account number. An investigation showed that the account number was hung up in a batch program upstream. But it was too late: By then, the state had been cut off by the bank.

Airlines are especially bad, says Richard Wang, an assistant professor at MIT. Inaccurate data regularly forces planes to take off one-half to one-third full, he says, costing airlines tens of millions of dollars.

However, a slowly growing awareness has led more organizations to deal aggressively with faulty data.

"The main thing we have a concern with is inputting," says Ken Gaylord, quality manager at the Veratec Division of International Paper Corp. in Athens, Ga. "You've got to start out right to begin with."

Even though no major errors have been caused by data entry, Gaylord says, the company has devised a careful set of checks and balances to prevent glaring errors. Some businesses are also experimenting with a small but growing handful of software products aimed at sampling, analyzing and correcting data quality (see story page 84).

At the Account Services Department of Denver-based Colorado National Service Corp., the data-checking routine begins every day at 5:30 a.m., according to Roy Pall, assistant vice president of the Colorado Bankshares, Inc. subsidiary.

problem

- Poor-quality data residing in corporate databases costs U.S. businesses and the government billions each year.

Each morning, workers sift through data from electronic funds transfer, on-line financials, remote data entry, a bank clearinghouse and the company's own proof department, Pall explains.

Automated balancing software from Unitech Systems, Inc. in Lisle, Ill., helps determine whether data and source are accurately balanced. Research shows if the problem stems from a user error or from system integrity. Another safeguard: Source data is always balanced before being passed to IS.

No easy fixes

But getting to the root of such a complex problem isn't easy, IS managers and consultants warn.

John Zachman, an IBM systems architecture veteran who now heads Zachman International, a La Canada, Calif., consultancy, says one the toughest problems ironically results from the conscientiousness of database administrators.

"The database administrator discovers a performance problem, changes the structure of the data at the physical level and what happens? He just changed the meaning of the data relative to the enterprise," Zachman says.

Ronald Shelby, second vice president of Connecticut Mutual Insurance Co. in Hartford, places much of the blame squarely on his fellow systems people, however well-meaning they are.

causes

- Data entry errors.
- Data entered incorrectly because complete and accurate information was not available.
- Faulty data purchased from outside vendors.
- Data "mismatched" during merging process.
- Poorly synchronized transaction processing.

"The thought never occurs to us that, if I write 10 programs that have separate files and if 40% of the data is in files that overlap, then that results in even more systems work to build those batch programs and to summarize them," he says. "We've been blind to the fact that files live longer than the programs we write to produce them."

One result, he says, is that money is wasted creating redundant systems. Worse, reuniting the various islands of data is very expensive.

As a result, he says, "We spend tens of millions of dollars, and we've added very little value to the business."

And even though technology has improved, data can still be compromised by sabotage, viruses, crashes and other hazards. "We had an East Coast customer a few weeks ago who called in and said he suffered a [data] drive crash," says Bob Kleckner, vice president of technology marketing at X L Datacomp, Inc. in Hinsdale, Ill., a subsidiary of Storage Technology Corp. in Louisville, Colo.

"Now part of the procedure in a case like that is to pull whatever data you can off the disk drive and pump it onto a new drive and try to put the data back," Kleckner says. "Well, we were about 98% successful, and that's usually pretty good, but we had to ask the question, 'What didn't get restored?' "

Unfortunately, the client had failed to do backup and recovery, so data was in fact lost, Kleckner says.

results

- Banks and brokerage houses violate SEC reporting.
- Utilities, telephone and transportation companies bill incorrectly.
- Hospitals cannot collect receivables because of invalid patient information.
- Aerospace firms and large government contractors have cost overruns and late deliveries because of unreliable project management data.
- Manufacturers face product line rework and recalls caused by unreliable design and production management data.

Measure by measure

It is likely to take a long time for large corporate and government units to beat the dirty data problem. After all, Hansen notes, it took a long time to create the corrupt data and to percolate it through multiple layers of complex systems.

Most experts agree that the first step, as in many areas, is to simply acknowledge that a problem exists.

Companies committed to quality are in a strong position to tackle the problem, MIT management professor Robert Goldberg adds.

"When the chairman of the board says that quality is of the highest priority, the quality of the data should be included," Goldberg says.

While few are eager to tackle the complex and odious task of cleaning up dirty data, Linda Amoroso, data quality manager at Sun Cos. in Philadelphia, suggests the job isn't without its comforts. "We have found that we have databases out there running for the sake of running, which is not unique to us," Amoroso says. "But it feels very good to know that we are eliminating computer time and production scheduling time."

Consultants and IS directors say they hope the short-term payoffs are satisfying enough to keep firms tackling the problem for the long haul.

"There is no single silver bullet," QDB Solutions' Hansen says. "Just as with TQM [in manufacturing], we need little iterative systems that improve data quality, not a wholesale rewrite of our data." •

The dirt on dirty data

Almost 60% of 501 IS managers at medium and large companies (annual sales more than $20 million) surveyed by *Computerworld* report problems caused by poor-quality data. Nearly all are taking steps to correct the damage.

q. Has corrupted, inaccurate or incomplete data ever negatively affected your business operations?

a.

Yes	293
No	196
Don't know	12

What specific damage has occurred?

Number of respondents: 293
(Multiple responses permitted)

Damaged files/Lost data	76
Cost overruns	55
Conflicting reports	53
Improper reporting of regulatory information	42
Improper billing	30
Poor decisions	22
Delivery delays or errors	21
Uncollected receivables	13
Hardware failures	12
Product recalls	3

q. Is your organization taking any steps to correct and improve the quality of data in your databases?

a.

Yes	258
No	33
Don't know	2

What specific steps are being taken?

Number of respondents: 258
(Multiple responses permitted)

Replace problem equipment	39
Use specialized software to sample and analyze data	36
Form task force/committee to investigate problem	35
Data backup/Disaster recovery	33
Quality control	29
Monitor/Control data entry	23
Install/Upgrade database software	22
Training	20

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▶QDB/Analyze
A data quality management tool that lets organizations monitor and certify the accuracy, completeness and integrity of information stored in databases. The rule-based system runs under Microsoft Corp.'s Windows 3.1 on 486 and 386 personal computers.
QDB Solutions, Inc.
Cambridge, Mass.
(617) 577-9205

▶Bachman Database Administrator, Bachman/DBA Catalog Extract
OS/2-based Database Administrator uses an expert system to help database administrators create, manage and enhance optimized DB2 systems.

Catalog Extract for MVS, VM or SE lets database professionals synchronize the design on workstations with a database catalog.
Bachman Information Systems, Inc.
Burlington, Mass.
(617) 272-9003

▶ACR/Plus 1.0
A set of rules-based software tools for MVS environments that verify file use, balance summary-level information and reconcile data items at multiple levels of detail. PC-based interfaces are optional.
Unitech Systems, Inc.
Lisle, Ill.
(800) 950-5225

Other product and service providers:

IntelligenceWare, Inc.
Los Angeles, Calif.
Database statistical analysis, reporting.
(310) 216-6177

Database Design Solutions
Pottersville, N.J.
(908) 439-3727

The Quality Assurance Institute
Orlando, Fla.
(407) 363-1111

New breed of data quality software

The new varieties of data quality software can help IS managers sample and correct data. Shown here is a portion of a sample from QDB/Analyze, which automatically generates detailed reports describing exceptions in databases.

Order number	Customer number	Date	Stock	Quantity	Price	Error description
43372	19-341	4/2/92	IBM	100	$89.38	Duplicate order number
43372	21-342	4/3/92	DEC	250	$53.25	Duplicate order number
59972	35-214	4/3/92	GLW	3,000	$32.50	Large trade inconsistent with customer history
87654	11-234	4/4/92	CCI	175	$18.25	Customer number invalid
97654	09-768	4/4/92	HSY	200	$27.50	Price outside daily high/low range

Source: QDB/Solutions, Inc. CW Chart: Stephanie Faucher

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MIT profs organize investigation

A pair of professors at MIT say they are "very close" to bringing a U.S. subsidiary of Japan's Fujitsu Poqet Computer Corp. and France's Bull HN Information Systems, Inc. into a research consortium that would explore ways to ensure data integrity.

Richard Wang, assistant professor at the Cambridge, Mass., institution, says he is confident the agreement will be signed by early next month. The consortium, called Total Data Quality Management, is under the direction of Stuart Madnick, a full professor at MIT.

The idea began last spring when Poqet, then a separate company, approached Wang with a Poqet personal computer "to see if we could make use of it," Wang explains. "They were interested in using it for data acquisition technology. Their claim was that if you used the right data-capture device from the very beginning, you could make your data cleaner rather than have to use data quality [techniques] down the road."

The consortium would bring together vendors such as Bull and Fujitsu Personal Systems in Santa Clara, Calif., with users such as Boston's State Street Bank, Wang says.

"We would provide the research opportunities and the research results to these companies before they get published," Wang says. "They would be able to talk to us in helping identify research directions, and they would be able to send people here."

resources

- "Cleanup efforts target dirty data," (*Computerworld*, October 28, 1991).
- "How clean is your data?" *Data Based Advisor*, February 1992.
- "Database function: Today's DBMSs provide integrity checks, triggers and stored procedures," *DBMS*, November 1991.
- "Spring cleaning of the DB2 catalog," *Database Programming and Design*, July 1992.
- "The big picture: Proper data object identification can help separate important information from the junk," *Database Programming and Design*, July 1992.

Clean up your data act

As catastrophic as the results of bad data can be, there is hope. QDB Solutions, Inc. President Mark Hansen suggests a broad, five-step, Zero Defect Data approach for improving corporate data quality.

1. Identify the data to be improved. Start with a high-level assessment of where data quality has the greatest impact on the bottom line. Once you've identified where data quality improvement will affect the bottom line, ask database users which data gives them the most trouble. Select a manageable portion of the database for data improvement.

2. Measure the quality of the data in the database. As the old adage goes, "You can't manage what you don't measure." Ascertaining current quality is the key to making improvements. Get users to specify business rules about the data. Then use those rules to find records that are inaccurate, imcomplete, inconsistent or outdated.

You should also measure the levels of technical integrity in the database, such as uniqueness of primary keys, referential integrity and incomplete or missing data. Such contraints are not usually enforced as well as they should be, particularly in older databases or flat-file systems.

3. Identify causes of poor data quality. Armed with these measurements, apply the "80/20 rule." Identify the 20% of your company's data quality problems that cause 80% of the errors detected by your measurements. For each of the data quality problems in the top 20%, look at some of the defective records you have found and identify their causes.

Causes to look for include data entry errors, data intentionally entered incorrectly because complete and accurate information was unavailable at the point of entry, faulty data purchased from outside vendors, data that was mismatched during a merging process and poorly synchronized transaction processing.

4. Improve systems to prevent data quality errors. For each of the causes of errors identified above, develop an action plan to prevent errors from recurring. In the long run, it's better to invest your energy in fixing the causes of your data quality problems than to try to scrub data after the fact. Whenever possible, enforce data quality constraints at the database, using triggers or stored procedures. Contraints that can't be enforced at the database can sometimes be enforced using edits embedded within the application code. (Warning: Be careful with such edits.)

Look for opportunities to re-engineer systems to improve quality. Minimize the number of processing steps between data entry and the database (each processing step represents an opportunity for error). In a networked environment, ensure that all applications users who have access to the database are included in your quality control program.

5. Measure your improvements. Once you've implemented the improvements, continue to measure the database to ensure that quality is improving.

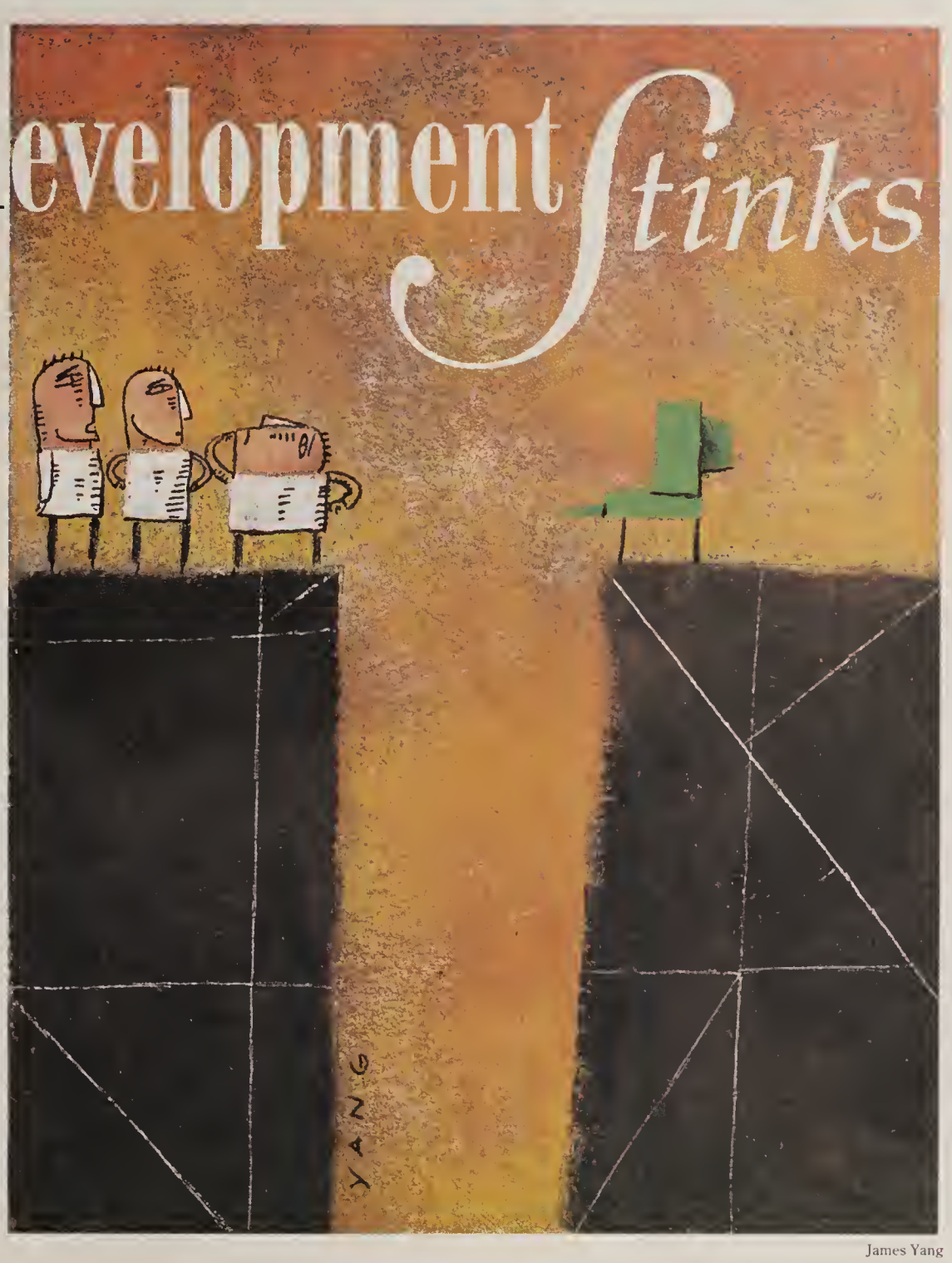
Once you've completed your project, start again from Step 1. Data quality, Hansen says, requires a continuous improvement approach.

PETER TIETJEN

Why PC development stinks

Business applications coders can't take PCs seriously because the machines lack the tools and support facilities these developers need

BY DAVID VASKEVITCH



James Yang

Business applications developers have been called backward, obsolete and paranoid for not downsizing development from the mainframe to the personal computer. But truth be told, most of these developers have become very serious about moving all or part of their applications development onto PCs or local-area networks.

What's holding them back? PCs lack the tools, methodologies and support facilities that make sense for the million-plus team-oriented developers who work on business applications such as order entry, accounts payable and inventory control. The development functionality available on PCs and LANs is geared to different development communities — systems software developers or builders of small-business applications (see story page 86).

Something's got to give, and that something is vendors. They need to give business systems developers the languages and tools to build desktop applications, to process business rules and to store and retrieve records from databases. A coherent system infrastructure, which links and coordinates the pieces of a large business application, is very important, as are facilities that aid in team development and version control.

Here's what developers want:

Give us some high-level tools

Large business systems typically have three components: the user interface, the database and the business rule processing. The allure of PC tools such as Powersoft Corp.'s PowerBuilder, Microsoft Corp.'s Visual Basic and Asymetrix Corp.'s ToolBook is that they help create user-interface applications as much as 10 times faster than Fortran or Cobol.

But PC-based tools concentrate on only part of a big system — the part the user sees. That's not enough for large-system developers, who need tools such as Cobol, computer-aided software engineering (CASE) or expert systems to deal with large volumes of data and complex sets of business rules. They need help with integrating nondesktop pieces of an application into the overall system.

Cobol may not be suitable as a system programming language or for building graphical user interfaces (GUI), but it does excel at expressing business logic. CASE tools enable a developer to diagram a model of the business, express detailed rules using the same diagrams and then generate Cobol code automatically. Expert systems enable system designers to express business rules directly, instead of having to convert them into a programmatic representation.

These primary business rule tools have no place today in the PC environment.

The sad fact is that today's PC development offerings ignore the picture of the business system of the future. This system has different components that work in concert but may physically run on a variety of computers. For example, the desktop applications may run on individual PCs, the business rules processes may run on local servers, while the database may be distributed among local servers and one or more mainframes.

The developer of a large business system wants to know how this kind of application, distributed across many computers, gets tied together. In the future, it will do so in three ways:

- **Communications facilities.** These will provide the glue that lets a Visual Basic program in a desktop PC talk to a Cobol program in a server, and it lets the Cobol program talk to a DB2 database in a mainframe.
- **Distributed transaction support.** Such support will enable applications to make changes in two or more databases in different machines at the same time without having to worry about how to coordinate all the communications among the databases.
- **Administrative infrastructure.** A "watchdog" monitor will track the distributed sys-

Continued on page 86

Vaskevitch is director of enterprise computing at Microsoft Corp. in Redmond, Wash.

Continued from page 85

tem's status. If an order-entry user in Akron, Ohio, sees a frozen screen, for example, he will know whether it belongs to his machine, the local server, the warehouse server, the mainframe or the network.

Give us team development

Until recently, PC tools have operated on the premise that only one person works on an application and that the application is not split into several pieces. Thus, for example, once a developer opens a spreadsheet, nobody else can change it while he works on it. Certainly, given Lotus Development Corp.'s 1-2-3 or Borland International, Inc.'s Quattro, for example, it's barely even imaginable, let alone implementable, that two people could modify the same macro sheet at the same time.

But what happens when we're talking about building an order-processing system (with many components) designed to handle hundreds of locations spread around the world? The project probably spans many teams, each with a dozen or more developers.

The strategy at the heart of an industrial-strength development language such as C or Cobol is to facilitate multiperson and even multiteam development. The assumption is that many people will be making changes to the same code base at the same time. There are specific facilities for sharing common definitions, subroutines and data structures.

With this structure in place, an automated build system pulls together the elements required to construct a working system, including common code and shared data, enabling the developer to focus solely on the part of the system he is changing. A version control system ensures that while a developer works on one part of the system, other developers do not change the very same code. Finally, an automated test system, working with the version controller and the automated builder, lets each developer test his changes while ensuring that he didn't break anything else.

This setup works because the development environment supports a concept of modularity: breaking things up into pieces and then gluing the pieces back together in a controlled fashion.

A development support infrastructure focused on supporting teams will be critical if PCs are to be useful for building large applications.

Give us analysis and design tools

Until now in this discussion we have assumed that programmers program. While this is certainly true, it is far from the only activity critical to the development of an application. When we look at how the professional applications programmer spends his time, the importance of analysis (and design) really stands out. In fact, when building a business application, he spends more than half of his time in nonprogramming activity.

The problem is that the PC world neither acknowledges nor supports this activity. The PC world still emphasizes *how* to build rather than *what* to build.

In the mainframe world, a whole category of tools and methodologies has evolved to support developers in analyzing and designing applications. In their automated form, these tools include dictionaries (repositories), modeling tools and forward- and reverse-engineering facilities and associated tools, particularly those related to data administration, to make these approaches an integral part of the development and operational environment.

CASE tools, for instance, are a key choice for automating the development environment and, in particular, supporting analysis and design activities. However, existing CASE tools are either mainframe-based and mainframe-focused or PC-based but incomplete.

While mainframe-based CASE vendors are adapting their environments to client/server architectures, GUI front ends and distributed databases, these vendors are far from done. Moreover, the most successful large CASE tools are still unavailable for environments such as Microsoft's Windows and Apple Computer, Inc.'s Macintosh. Even when CASE products operate in such environments, they tend to be less sophisticated than the offerings familiar to professional applications programmers.

The upshot is that for developing large business applications on PCs, a critical category of tools used to support more than half the work effort is not yet available in the form developers need.

Today, PC-based applications tend to be personally focused or relatively small in scope. Larger applications used to run the business are still built on mainframes. This big-iron orientation isn't the fault of developers; the tools they need for viable PC development are missing.

These tools need to focus on business rules as well as user interfaces, provide facilities for tying together large systems with many components, support development teams with many programmers and recognize that the business system development process focuses as much on analysis and design as on programming.

Once they get what they need, developers will take PCs seriously. •

PC tools favor stand-alone developers, not teams

There are more than a million applications developers working on large business projects who do not have the tools required for serious development in a PC environment. Throughout the '80s, PC-based tools were focused on these three groups of programmers:

• The stand-alone tool programmer. This person produces small utilities for use by himself, friends and maybe even distribution as shareware. He works in Pascal or C and is the target of fast and friendly environments such as Microsoft's Quick C or Borland's Turbo C.

This community includes both professional programmers working on small projects (or large projects in small companies) and amateur programmers who work late at night at home on one or more DOS machines.

• **The professional tool programmer.** This person works on producing a product either for commercial, shrink-wrapped distribution or for distribution within a large organization.

On larger projects, this programmer works with heavy-duty compilers that have sophisticated optimization and support of multiple-memory models and linking conventions. While C or C++ may be his primary programming language, he uses assembler either for performance reasons or to gain low-level access to hardware.

The software this developer writes is often intrinsically multiuser and must work on a LAN and take advantage of its communication and synchronization facilities.

This forces the programmer to deal with up to three operating systems: Windows on the workstation, OS/2 or Unix on the server and the LAN tying the network together.

• **The stand-alone application programmer.** This person writes applications to run a home or small business. These applications may be stand-alone or used in conjunction with shrink-wrapped software that provides accounting and other functionality.

Focusing on business needs rather than technical functionality, this developer uses high-level simple languages or database-oriented languages such as Borland's dBase, Fox Software, Inc.'s FoxBase or PAL, the Paradox Application Language for Borland's Paradox database. His systems are often ad hoc and unstructured, with minimal documentation. His development schedule is generally measured in days or weeks.

The business application programmer is a different developer from the three above and has different needs. He focuses on business, not technical, requirements, and his language of choice is Cobol. Most of his heavy-duty applications development is done in conjunction with a large team or with many small teams.

In the large companies at which you'll find this programmer, PC-based applications must generally access mainframe-based data. To achieve cooperative processing, PC-based code must interoperate with server-based code, which must work closely with mainframe-based software.

As a result, the development team must include the skill set to deal with Windows, OS/2 (server), MVS (IBM mainframe) and, perhaps, VMS (Digital Equipment Corp.'s VAX) and Unix.

Up until this point, the mainframe has been the only place in which tools and facilities exist to meet the needs of these business systems developers.

What's appropriate?

PC development tools work best for single programmers creating small-scale products

	One-man project	Team development
Tools (Utilities, shrink-wrap)	• Pascal, Quick C, Turbo C • Single programmer • DOS/Windows	• C, C++, assembler • 5- to 6-person team • Windows, OS/2, LAN
Business applications	• dBase, Fox, PAL, Basic • Single programmer • DOS, Windows	• Cobol, C • Multiple teams • MVS, VMS, Unix, OS/2

CW Chart: Janell Genovese

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MANAGER'S JOURNAL

EXECUTIVE TRACK

Edward L. Suggs Jr., 40, has been named president of a newly formed IS unit at **Coastal Healthcare Group, Inc.** Prior to the promotion, Suggs ran the billing and collection units for the Durham, N.C.-based health care management organization.

Barnett Banks, Inc.'s director of management information, **Andrea Mims**, recently assumed additional responsibilities at the Jacksonville, Fla.-based financial institution. Mims, a former independent management consultant who joined Barnett last year, will coordinate the bank's financial systems with those of its information systems subsidiary, **Barnett Technologies, Inc.** The new duties include management reporting and maintaining the integrity of financial data.

John L. Diesem, formerly senior vice president of Systems and Technology at the **American Stock Exchange** in New York, has joined the **Paramount Communications, Inc.** publishing operation **Simon & Schuster, Inc.** as Systems and Technology Group vice president in charge of planning and integration. Diesem will be responsible for planning, architecture, resource management, business unit liaison, system practices, security, quality assurance and advanced technology functions.

In Pleasantville, N.Y., **Reader's Digest Association, Inc.** has a new position — director of global MIS — and a new person to fill it: **Richard T. Brant**, 47, formerly a partner at Arthur Andersen & Co.

J. Peter Schmidt was recently appointed director of information management, sales, service and marketing at the Warren, Mich.-based **North American operations planning** division of **General Motors Corp.** Schmidt, a 23-year GM veteran, had been serving as group information manager at the automobile manufacturer's former truck and bus group.

Round up the unusual suspects

At Hughes Aircraft, the road to IS leadership isn't necessarily through IS

BY MARK HALPER
CW STAFF

The squeaky user may often get the grease, but at Hughes Aircraft Co., he's also been known to get the CIO assignment.

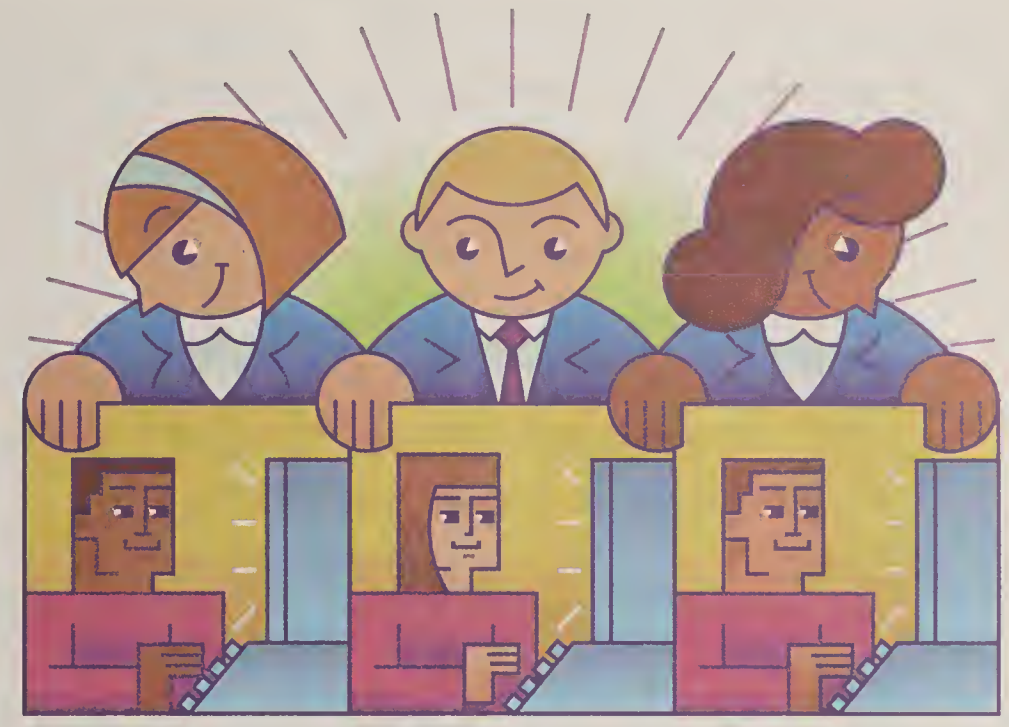
Driven by an exasperated sense of user must know best how to make information technology sing a strategic song, the $7.7 billion defense equipment manufacturer for some three years now has entrusted its corporate chief information officer post and several divisional information systems leadership positions to individuals who collectively could not claim a single day of previous IS experience.

Corporate CIO R. James Wensley — a Hughes engineer for 30 years until he was asked to navigate the company's IS direction in 1990 — explains what prompted this trend of dubbing relative outsiders as IS lords. The trend, he claims, emerged less by design than by happenstance. He recalls an IS old guard addicted to the latest and greatest computer offerings; their impressive but costly technological stable, he says, was not translating into strategic advantage.

"The users were poorly coupled with information technology," Wensley says. "There was a real disconnect."

Gary Osborn, CIO of Hughes' Space and Communications Group — who as a Hughes veteran of 30-plus years had no IS background when he stepped into the IS leadership fold in 1991 — was even more blunt in his appraisal of the previous state of IS affairs.

"None of the systems were integrated, you never could get at the information you needed, it was not user-friendly, and it was expensive as hell," Osborn recalls.



Steve Musgrave

Like Wensley, he contends that El Segundo, Calif.-based Hughes' IS shops had loaded up with the best equipment money could buy but to little avail to the user — or even worse, to the bottom line. While the glasshouse was full of impressive equipment, it was also replete with redundancies and inaccessibilities, he says.

Excess baggage

"I think the IS guys got locked into their technology," Osborn continues. "If it existed, we owned it. We had redundant data everywhere. We spent all our time arguing over who had the right data."

Wensley and Osborn, along with two currently outgoing divisional IS heads, Anthony Chang at Radar Systems and Dino Ruffoni at Ground Systems, have all been denied the luxury of a leisurely orientation in IS. To the contrary, each has presided over some massive and ongoing downsizing projects at the missile maker, which is in midflight on a bumpy and slightly delayed excursion to take data off its mainframes and scrap much of its eclectic collection of big iron and heavy-duty software.

Osborn recalls how Hughes first grew interested in him as a CIO candidate. "I complained loudly enough about [the IS operation] that they asked me to go away and take a look at what I would do to fix it," says Osborn, who was serving as associate manager of the company's Space Vehicles Division when he was asked to begin an IS study in 1990. By February of the following year, Hughes had installed him as divisional CIO.

Wensley, who was manager of tactical engineering in Hughes' Electro-

Continued on page 92

How the other half lives

How does the life of a design engineer or product manager or business unit leader differ from that of a divisional or corporate CIO?

Hughes Aircraft CIO Gary Osborn sums it up in three syllables as he describes the workday world on the CIO side. "Politics," he says.

And he ought to know. Osborn is one of a handful of Hughes executives who were longtime engineers or project leaders until the company catapulted them into CIO status.

Corporate CIO Jim Wensley agrees with Osborn's trisyllabic take.

"I'm not sure I would put it that way, but in my past career [as a Hughes division manager and design engineer] when I decided I wanted to do things, I could just get them done," he says. "Now, it's by consensus. There's a lot of selling involved."

In other words, politics.

"Too much of it," says Osborn, who before being named CIO in 1991 was assistant division manager of space vehicles. "You spend a lot of time trying to convince the rest of the operations [to buy into your IS agenda]. And in terms of the pecking order, [IS] is still not at the top. Resources are tough to come by."

Wensley further notes that selling ideas means selling down in the organization as much as it means getting upper management to buy in. "If you don't have the troops behind you, you're not going to get anywhere," he says.

And politics is only part of the rough-and-tumble world of the IS professional. As outgoing Radar Systems CIO Anthony Chang notes, "IS is a service organization — it doesn't matter how good a service you provide, it's never good enough."

With that assessment, it is perhaps no wonder that Chang says he is now "glad to be getting out" of his CIO job, a post he says he nonetheless enjoyed. Chang is resuming full-time duties as associate division manager for advanced systems, which makes weapons and fire control systems.

MARK HALPER

Outsourcing proves itself a useful business tool — no fad

BY NELL MARGOLIS
CW STAFF

BOSTON — Is outsourcing on the wane? The term may be, consultants and users say; the concept, on the other hand, is gearing up for another boom.

New reasons to outsource and a broader selection of ways to structure the deals will fuel outsourcing beyond its status as a quick fix for bleeding bottom lines, said information systems management consultant Philip J. Pyburn in a recent address before Boston-area members of the Society for Information Management.

As user firms veer away from viewing information technology as a direct competitive weapon — the "mine is bigger than yours" camp — and recast information technology as a tool for enabling and supporting core business activities, Pyburn noted, the firms will also increasingly turn to a variety of carefully tailored outsourcing arrangements to grease the way to their goals.

Outsourcing is quickly evolving into a game everyone can play, said Pyburn, who is president of Cambridge, Mass.-based Management Support Technology Corp. "A second point is, everything is up for grabs," he added. Pyburn said he envisions savvy firms eyeing each discrete element of an overall business blueprint as fair game for outsourcing: in some cases under the traditional facilities management contract, but with increasing reliance on partnerships, ad hoc alliances, joint ventures and hybrid forms tailored to the needs at hand.

Pyburn: *Outsourcing is a game everyone can play*

"The key question in an outsourcing decision used to be, 'Can we run our IS shop as cost-productively as an outside service vendor can?' " he said. "In the '90s, the key questions will be, 'What are we trying to accomplish in this business? How does IS help?' And, 'Can our internal IS resources get us there fast enough? And without a weakening of strategic focus?' " When the answers to either or both of the last two questions head toward "no," Pyburn said, users will head toward outsourcing.

New York-based Revlon, Inc. did, for instance, when it hired Chicago-based systems integrator Andersen Consulting to run its mainframe-based data processing operations while the firm's internal IS forces focused on a move to client/server [CW, Feb. 10].

So did Hewlett, N.Y.-based Anchor Bank Corp. when, in the wake of a successful turnaround effort, it entered into a complex outsourcing and software development alliance with Little Rock, Ark.-based bank services specialists Systematics, Inc. [CW, April 13].

Both deals mark subtle, but critical departures from the outsourcing "megadeal" of the late 1980s. The Revlon/Andersen pact, for instance, is shorter in scope than the traditional 10-year megadeal and specifically tied to a finite corporate goal. Anchor/Systematics is a six-year deal; moreover, unlike the once-typical farming out of IS, it is premised on extensive co-development efforts in the future.

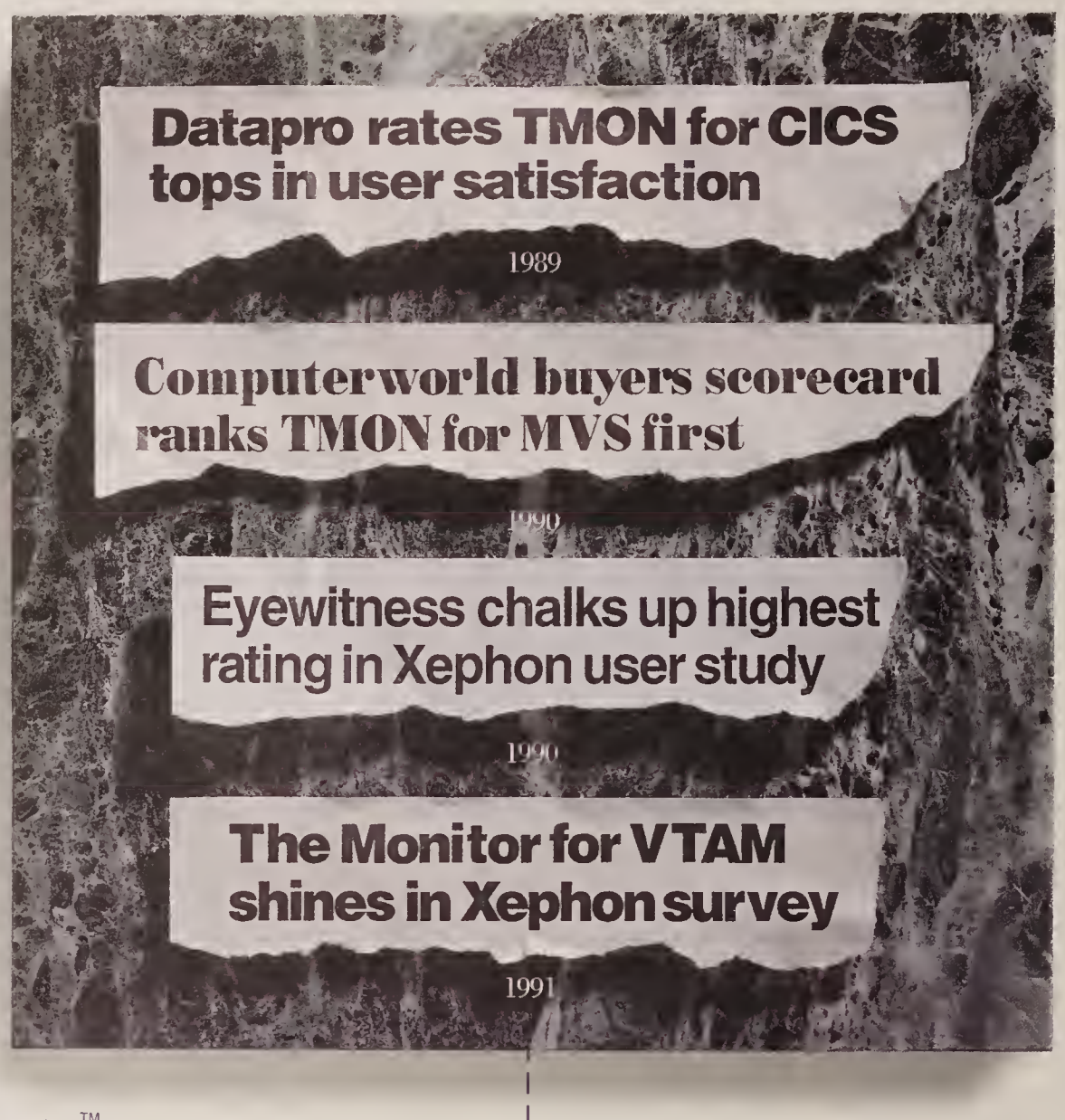
Wave of the future

"That's the way we believe outsourcing will be going," said the chief information officer at a major insurance company in the Midwest who requested anonymity for himself and his firm. Last year, faced with "the major task of revamping all our legacy systems while we moved to client/server, implemented CASE and basically retooled all our people," the firm outsourced its mainframe-based IS operations — outgoing but still mission-critical — to a professional services vendor.

"Our only other choice was to hire [the outsourcer] to build the new systems," the CIO noted. "We considered giving that nice juicy plum to an outsider, but we also wanted to demonstrate to our own employees that we really do think about them a lot."

Did the employees get the message? "Oh my, yes," the CIO said. "The consultants fit right in. We've accomplished better quality work faster than we originally thought possible." What is more, he added, "although we never went into this for cost-saving reasons, when we put the pencil to it, we found that we'd even saved a little money."

Not surprising, said DuWayne Peterson, former Merrill Lynch & Co. CIO and now president of DuWayne Peterson Associates, a consulting firm in Pasadena, Calif. "Everybody's thinking about" new-wave outsourcing. But they are not necessarily calling it "outsourcing," Peterson said. As the pattern of shipping out IS gives way to a panoply of flexible alliances and to variations such as transitional outsourcing along Revlon/Andersen lines, he said, "Outsourcing is becoming less of a phenomenon and just a standard part of the smart way of doing business."



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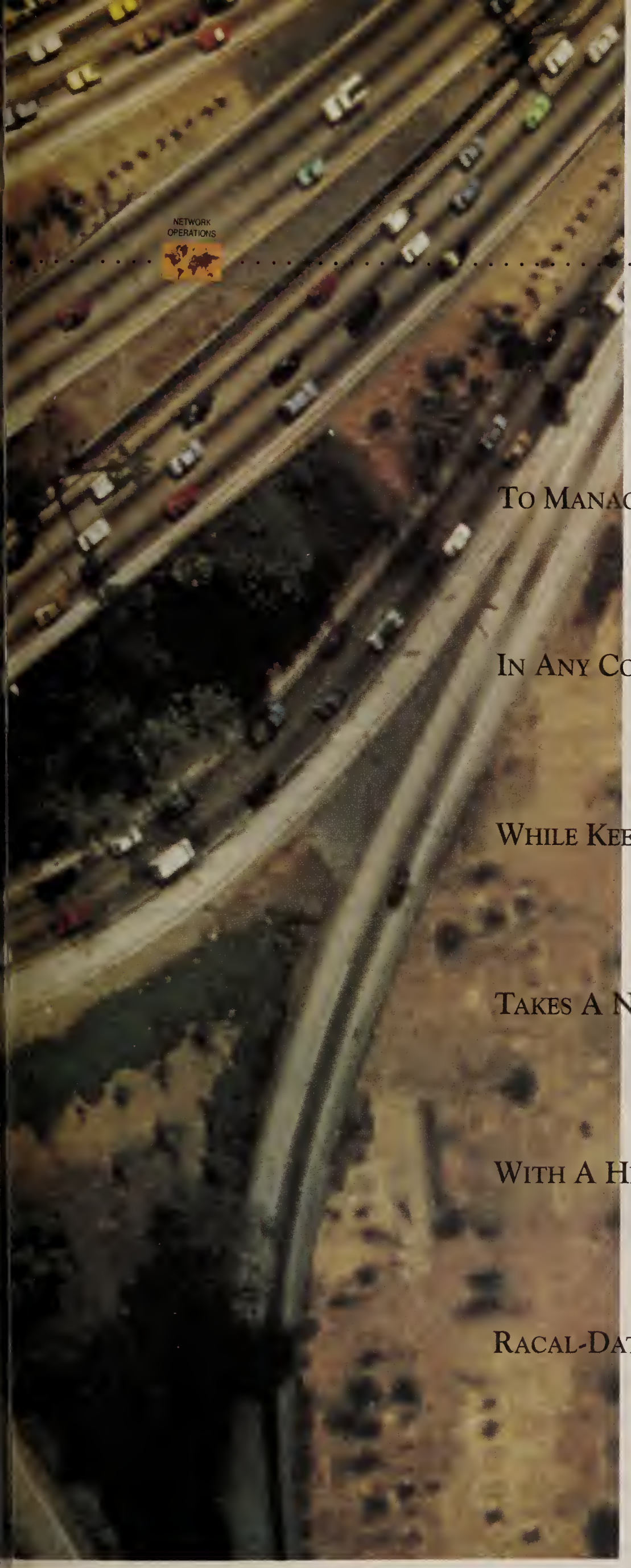

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The unusual suspects

CONTINUED FROM PAGE 87

Optical and Data Systems Group when he was tapped for corporate CIO in 1990, recalls that he "had shown an interest" in improving the strategic use of IS.

"And that's usually what happens at Hughes," he says. "If people show an interest in something, then somebody gives them the job."

Osborn spells out a basic difference between how he and the other overnight IS experts have conducted matters and the leadership strategies of their IS-steeped predecessors.

"Most of us are project-oriented: in other words, focused and cost-conscious," he says of the gang of four. "So we manage IS as a project, not as a general staff without a plan or a schedule."

While Wensley did not have IS experience, he did have a background as a computer user by virtue of extensive hands-on experience with computer-aided design (CAD) programs.

"That labeled me as someone interested in IT," Wensley recalls, "which is a little distorted because CAD is a little different from the business use of computers."

Continued on page 93

Back to basics

Hughes Aircraft CIO Jim Wensley and others point out that Hughes is not exclusively seeking technology users, rather than techies, as CIOs. After all, Wensley notes, the company still has some divisional CIOs whose backgrounds are pure IS, and the incoming CIO of the new Aerospace and Defense Sector — a newly minted corporate entity that is swallowing up the divisions headed by non-IS-reared Anthony Chang and Dino Ruffoni — is an IS practitioner, Mahvash Yazdi.

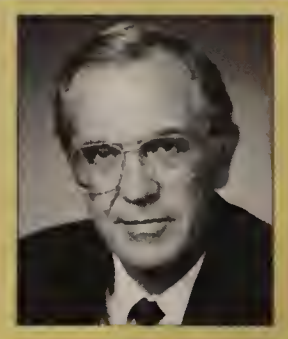
But Wensley et al. agree that their own careers took an unusual twist when they landed in their respective CIO chairs.

This fall — possibly this week — Chang is exiting his CIO job to devote full-time attention to the post he never relinquished: associate division manager at Hughes' Advanced Weapons Division. "I still don't know anything about information systems," he comments.

But if his self-described accomplishments in his three-year stint as divisional CIO are accurate, that statement is a modest one. According to Chang, under his "business leadership," Radar Systems cut IS operating costs from about $120 million in 1989 to a projected $37 million next year — some of which may be attributable to reduced business.

MARK HALPER

R. James Wensley, corporate CIO



"That's what usually happens at Hughes: If people show an interest in something, then somebody gives them the job."

• • •

- **1958:** Joined Hughes as an engineer in guided missile lab.
- **1965:** Was senior project engineer on thermal control development test program for Surveyor lunar lander.
- **1977:** Responsible for spacecraft, thermal and structural design; became involved in group's CAD initiative.
- **1984:** Associate manager of group technology division.
- **1990:** Named corporate CIO.

Gary Osborn, divisional CIO

"I complained loudly enough [about IS] that they asked me to go away and take a long look at what I would do to fix it."

• • •

- **1959:** Joined Hughes as a messenger upon high school graduation. Studied business at UCLA and Harvard while on the job.
- **1978-81:** Rose through manufacturing operations; served as manufacturing department and laboratory manager.
- **1987-1991:** Associate manager, Space Vehicles Division.
- **1991-present:** Director of Materiel & Information Systems; CIO of Space and Communications Group.

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However they got to their positions, all four faced the colossal challenges of cutting costs and bringing computing power out of the glass house and into the hands of Hughes' users.

When Osborn stepped into his new job, he began looking for two things: superfluous equipment to jettison and techniques to make data available to those users who could gain strategic advantage from it.

The Space and Communications Division is now engaged in an ambitious distributed computing project that entails loading up several Hewlett-Packard Co. 9000 minicomputers with business information readily available to Hughes' shop floor workers and business managers through PC connections [CW, Aug. 24]. Until that system is implemented, Osborn says, many users will simply go without the strategic information that remains on an IBM mainframe.

Osborn also has distributed computing plans for manufacturing and engineering operations. While this process will add equipment such as minicomputers and workstations to Hughes' technology stable, he says, it will also mean scrapping larger, more expensive iron.

In the Radar Systems Group, which is now in the process of being absorbed into the new Aerospace and Defense Sector, outgoing CIO Chang has already implemented a distributed scheme. In this case, "distributed" does not translate into "downsized." Rather, Chang notes, his distributed solution keeps data on an IBM mainframe and sends it out to PCs for processing.

The 3000s overfloweth

When Chang discovered that his colleague Ruffoni had excess computing capacity on the HP 3000s in Ruffoni's department, he struck a deal to buy some of the overflow. That move enabled Chang to retire his own department's 3000s.

In a corollary move, Chang discovered excess capacity on his departmental VAXs and has been selling processing to other Hughes operations.

Chang says his cost reduction measures have also included shrinking the company's number of software licenses — his group has jettisoned its Software AG AdaBase programs in favor of IBM's DB2 — and slicing payroll from 900 to 450 through layoffs, retirements and attrition.

In fact, Chang claims that he is leaving Radar Systems' IS operations in a state advanced well beyond other Hughes departments.

Anthony Chang, divisional CIO (outgoing)

"It doesn't matter how much [IS] service you provide; it's never good enough."

• • •

- **1972:** Joined Hughes as member of technical staff, performing a variety of programming tasks in support of radar product lines.
- **1978:** Named associate manager of Radar Systems Group's Advanced Systems Division.
- **1989:** Additionally named information technology director of newly reorganized Radar Systems Group.
- **1992:** This fall, expected to cede information technology director's title to devote full time to management job.

CALENDAR

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The Third Annual East/West High-Tech Forum. Prague, Oct. 11-14 — Contact: Edventure Holdings, Inc., New York, N.Y. (212) 758-3434.

Use, Inc.'s Fall Conference. Atlanta, Oct. 12-16 — Contact: Use, Inc., Lanham, Md. (301) 577-1881.

Europa Telecam '92. Budapest, Oct. 12-17 — Contact: International Telecommunication Union, Switzerland (011-41) 22-730-5689.

Enterprise Network Management Seminar. Elmsford, N.Y., Oct. 13-15 — Contact: Hart Rasmussen, Polytechnic University's Center for Advanced Technology in Telecommunications, Westchester, N.Y. (914) 347-6940.

Networld '92. Dallas, Oct. 13-15 — Contact: Kathy Ryan, Networld, Fort Lee, N.J. (201) 346-1400.

Multimedia World, Inc. Conference. Chicago, Oct. 13-16 — Contact: Jim Prude, Multimedia World, Alexandria, Va. (703) 684-5401.

Microprocessor Forum. Burlingame, Calif., Oct. 14-15 — Contact: Microprocessor Report, Sebastopal, Calif. (707) 823-4004.

DOD-STD Conference. Boston, Oct. 14-16 — Contact: David Maibor Associates, Inc., Needham, Mass. (617) 449-6554.

The Notional Association of Legal Vendors (NALV) Symposium. Newport Beach, Calif., Oct. 15-16 — Contact: NALV, Nashville, Tenn. (615) 726-3649.

OCT. 18-24

Information Technology Association of America (ITAA). Colorado Springs, Oct. 18-21 — Contact: ITAA, Arlington, Va. (703) 522-5055.

Society of Information Management (SIM) 1992 Annual Conference. Los Angeles, Oct. 18-21 — Contact: SIM, Chicago, Ill. (312) 644-6610.

Object Oriented Programming Systems, Languages and Applications Conference (OOPSLA). Vancouver, Oct. 18-22 — Contact: Daniel E. Steinbach, OOPSLA '92, Londonderry, N.H. (603) 432-7757.

Distribution Strategies for the Consumer Electronics Industry Conference. London, Oct. 19-20 — Contact: Suzy Shavin, BIS Strategic Decisions, Luton, UK. (011) 44-582-405678.

Afcom's Fourth Annual "Lights On" Conference. Las Vegas, Oct. 19-20 — Contact: Afcom, Orange, Calif. (714) 997-7966.

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FIRST PERSON

BY JAMES LAWLER
SPECIAL TO CW

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Why?

You gained this experience by volunteering at nonprofit organizations.

Volunteer work isn't often thought of as an educational opportunity, but it should be. Donating time to work on systems for a nonprofit can, for example, provide an IS professional with invaluable experience in hardware and software he would never see on the job.

There are a variety of systems-related tasks that most charities and interest groups would welcome assistance with. For instance, you could help organizations customize packaged software or train users.

In addition to gaining experience in areas that are outside your normal work responsibilities, you can also acquire more "soft" skills, such as leadership or project management abilities that will help you in your information systems career.

These skills can be gained by doing volunteer work of any kind. For instance, you could volunteer to head up charitable events including bike-a-thons, carnivals, picnics and raffles in support of local and national charities. These activities require negotiating skills as well as planning and communication skills.

Start early

It is advisable to participate in a volunteer activity early in your career because the career path for an IS professional is typically narrow. Early on, you usually support one department on one piece of technology, which limits you and your career growth.

However, volunteering allows you to explore other career paths and gives you a broader overview.

By interacting with a wide variety of individuals, you gain interfacing skills that will be valuable as you advance in your career and become more involved with a larger end-user community.

In addition, when you work with nonprofit organizations, you learn that many of the situations they are faced with are not black and white. It is helpful for an IS professional to be exposed to this because relationships with users are not always black and white, either.

You could also teach students how to use a computer. I am involved with a project in Harlem, instructing high school students about computers.

A typical IS professional — programmer or developer — could benefit from such an experience because he doesn't get much exposure to training or teaching others in his day-to-day work.

Another challenge I've been faced with in this teaching environment is that the schools only have 286-based computers. So in addition to teaching students computer basics, I have also been negotiating with firms to donate better personal computers.

Become a bargainer

Negotiating is one skill I have needed repeatedly during my career and in many volunteer situations.

For example, earlier in my IS career, I was a volunteer consultant at a national charitable organization in New York. I had to work through a political situation because a vendor who was close to a board member was trying to use his connection to have us select his firm's software package, which was not suitable for the group's needs. Therefore, it took some finesse for me to persuade the organization to select software that was offered by another vendor.

Lower level IS professionals may not face political situations such as this one on a regular basis. However, for a lower level IS staff member considering a managerial path but lacking sufficient managerial experience, this type of training provides a unique opportunity to develop skills.

Finally, if you've been laid off, volunteering is a way to keep your skills current while you're out of work, and it allows you to network for a new job.

Lawler is vice president of the Advanced Systems Group at Merrill Lynch & Co. in Princeton N.J.

Getting started

Finding an organization that needs your skills may take some time. Here are some tips to ease the selection process:

- Inquire at your human resources department about nonprofit organizations in your community that your company already sponsors.
- Investigate agencies that have touched you or your family members. It may be more fulfilling to volunteer for an organization that you have a personal interest in.
- Discover if others in your firm are volunteering. You may find it easier to volunteer with someone you know.
- Volunteer at your alma mater by helping to teach students or speaking on career-related issues.

JAMES LAWLER

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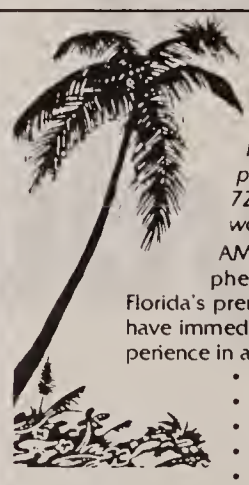

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Keep moving and avoid pigeonholes

Fast Track is a twice-monthly column dedicated to answering questions on career directions. This week's guest adviser is Chuck Muller, a principal at Andersen, Jones & Muller Associates in Southfield, Mich., a recruiting firm specializing in the placement of information systems professionals.

Q I am employed at a Fortune 500 company and have been a programmer/analyst in a large IBM mainframe environment for the last three years. I have the opportunity to get training and work on a development project using client/server technology and workstations. Should I dilute my mainframe skills?

A Moving data from mainframes to the local user area via client/server methods is beginning to become a hot area in data processing. Working in a graphical user interface and local-area network environment will complement your mainframe skills and increase your marketability. Knowledgeable candidates have been hard to find, resulting in higher salaries for the available candidates.

Q I work for a manufacturing company that rotates programmers from one project to another in different application areas. It seems that just when I get to know one area really well, I am moved to another. Would focusing my applications experience in one area, such as manufacturing-related systems, be better for my marketability?

A Having expertise in one applications area may be beneficial if you really like the area and want to become a "guru" in it. The downside to this approach is that you will then be pigeonholed in this niche, and you will be considered only for positions in that area. The reality is that when most firms are searching, they require candidates with a specific hardware and software background and let the applications experience fall where it may. Your broad applications knowledge will most likely increase your job prospects.

FAST TRACK
CAREER ADVICE FOR THE '90s

Q I am considering relocating from the Midwest to the southeastern U.S. because it seems to have more potential for job and career growth in the computer field. What is the best strategy for making this kind of move?

A The first thing you should do is narrow your target area to one or two selected cities and then do an extensive amount of research on each. This research should include visiting your library and requesting a "welcome package" from the target area Chamber of Commerce. This will give you information on housing, schools, areas and cost of living, as well as firms you will want to contact.

Secondly, research computer industry publications to find the firms with a technical environment that can take advantage of your strongest skills and contact them directly.

You will need to be specific in your reasons for relocating and be familiar with the area as companies are reluctant to get involved with out-of-town candidates because of the cost.

Q In my discussions with other programmers and in scanning the want ads, positions in contract programming frequently come up. I have worked for the same firm for three years and am thinking about my first job change. What are the positives and negatives of contracting?

A Contracting usually involves working for a contract service firm at a client company on a specific project for a defined set of time. Contract companies will usually hire you for your strongest skills, which they can immediately put to use on a client contract. After the first assignment, they will attempt to find you another contract. The pay is usually above market average, although options for training in new areas are limited. Also, if a new contract cannot be found, there is the potential of the company's laying you off.

☞ *We want to hear from you. Call your career questions in using the Fast Track line at (508) 820-8522; send them via MCI Mail to KDWYER or send them by fax to Kelly E. Sewell at (508) 875-8931.*

TIP of the MONTH

How to shake an image that is holding you back in your career

➤ You need to objectively assess why you have that image, which may require some very frank discussions with colleagues. Then you need to determine how to change the way you work, which can be very difficult because old habits die hard. But follow through — your change in actions will speak louder than anything else.

Brian D. Jaffe, manager, end-user services
Clairol, Inc., New York

➤ I'd make myself more visible to the people that have that image of me, to show them it's not true. I'd try to prove them wrong and to change their perceptions. If the image was just, I'd try to make a change. I truly believe that while first impressions are long lasting, they can be changed.

Don Malpass, programmer/analyst
Kennebec Valley Medical Center, Augusta, Maine

➤ The one way to get an image is through what you've accomplished. If it's an unfavorable image and it's warranted, perhaps you need to re-evaluate the way you've been doing things. Evaluate what caused you to earn the unfavorable image and make a change in the way you do things the next time.

Robert M. Goldberg, vice president, IS
Old Stone Bank, Warwick, R.I.

➤ We run into the problem of being perceived as too technical by our user group. We need to communicate on their level as much as possible. It's important to not use acronyms and lingo that they won't understand. You have to know the function of each department and what their roles are in order to help them.

Fran Moss, financial systems analyst
Memorial Medical Center of Jacksonville, Jacksonville, Fla.

Compiled by Kelly E. Sewell, assistant editor, features.

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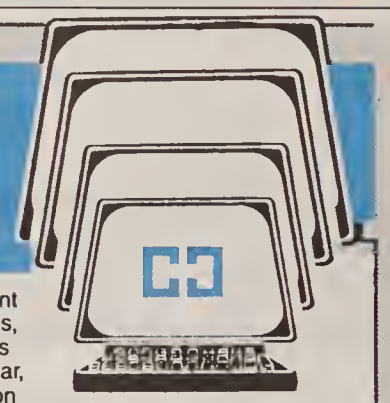

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STIHL Incorporated, international manufacturer of outdoor power equipment, is seeking a Manager of Information Systems. The position requires a Bachelor's Degree in MIS, Computer Science or related field and a minimum of 5 years experience in a manufacturing environment at a managerial level. IBM Mainframe, 9370, ES9000, application programming using Cobol and related database management, DOS/VSE experience including JCL and command level CICS is required. Working knowledge of VSAM preferred.

Extensive experience as application software consultant desirable, as well as exposure to AS400 environment.

A team player with a solid foundation in structured design and programming techniques will seek this opportunity in a prospering and challenging environment.

Please submit resume with salary history and requirements to:

Stihl Incorporated
536 Viking Drive
Virginia Beach, VA 23452
Attn: Carole G. Cowling
Equal Employment/Affirmative Action Employer

PROG/ANAL/ SYS/ADMIN/DBA
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Senior Systems Administrator: Upgrade and maintain Regional Office based computer software and hardware systems to include system security, new software development and installation, configuration and maintenance of third party software on all Regional Office computer systems, development of operating system configuration standard procedures and associated documentation and to assist in development of new software which directly enhances user ability to interface with the system. Use knowledge of, and experience with, Unix System Administration, Uniplex Administration, Unix Shell Programming, Unix E-Mail (including DHL OAS), UUCP Communications, RS-232 Communications, DOS Based Local Area Networking, PC/386/486 Hardware, DOS, TCP/IP Communications, X.25 Communications, Microelectronics, C Programming and Informix SQL. Must have 2 yrs exp in pos or 2 yrs as a Support Engineer. $36,000/yr, 40 hrs/wk, 8:30 - 5:30. Send resume to: Job Service of Florida, 2660 West Oakland Park Blvd., Fort Laudardale, FL 33311-1347. ATTN: Job Order # FL 0684795.

DIRECTOR Information Systems

International service organization based in South Fla. seeks an I/S Professional to fill an active role in the Company's growth and development process.

Position requires strong communication, management, leadership and organizational skills. Must be highly motivated, innovative and technically competent and experienced in the various facets of in-house and sub-contracted project development and support services. Familiar with technical aspects of Mid-range, LAN and PC systems, and remote PC communications. Preferred experience history of 7-10 yrs.
Forward resume and salary history in confidence to: CW92043, Computerworld, Box 9171, Framingham MA 01701-9171

Analyst - Tampa, FL - Undertake statistical analysis pertaining to financial projections models; develop programs using SAS to prepare data sets; interpret results; prepare reports; undertake multivariate and regression analyses, if needed; develop computer networks; use SAS, IML, VAX hardware, WORDPERFECT, EXCEL, SQL. Masters degree in M.I.S. 1 year experience in job offered or 1 year as Graduate Assistant. Applicant must have 3 months experience using the hardware/software indicated in Item 13 with respect to statistical analysis of financial models. 40 hours/week (9am-6pm); $32,000 per year. Send resume to: Ms. Pat Ganno, Job Order No. 0681444, Job Service of Florida, P.O. Box C, Clearwater, FL 34618-4090.

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- NATURAL
- PL1
- DB2/SQL
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- TANDEM
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Louisville, KY 40208
502-634-1387

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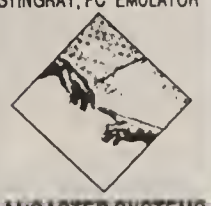

LANCASTER SYSTEMS
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NATURAL/DB2	
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Offices in: Kansas City, St. Louis, Boca Raton, Fl.

Programmer/Analyst - Tampa, FL - Enhance and modify Real Time Embedded Systems in data communications; write programs; prepare specifications; use SUN workstations; HP Protocol Analyzers, UNIX and VRTX-32, C++, Assembly Language, X-windows. Bachelor's degree in Computer Science, Math or Engineering. 2 years experience in job offered. 40 hours/week (9am-6pm); $37,000 per year. Send resume to: Ms. Pat Ganno, Job Order No. 0681434, Job Service of Florida, P.O. Box C, Clearwater, FL 34618-4090.

Network Programmer/Analyst, Sunrise, FL: Maintn & provide tech supprt for Novell netware network for sales orders, production, invntry contrl, acct recvbl, fin & sales reprt generation & analysis; devlp prog w/COBOL interfaced w/Btrieve; conduct Telink for EDI; instr/train netwk usrs. Master's degree in MIS + 6 mos in job. 40 hr/wk, 8:00am-4:30pm, $25,000/yr. Send resume to Job Service of Fl, 2660 W. Oakland Pk Blvd, Ft. Lauderdale, FL 33311-1347. Attn: JO#FL0682720.

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To become part of the NCCI team, you should possess a minimum of 2+ years COBOL programming experience, TSO, VSAM, JCL and OS/MVS utilities. Experience with DB2, IDMS, MicroFocus COBOL, C, Oracle and/or LAN's is highly desirable.

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This position presents a challenging opportunity for an individual who possesses a Bachelor's degree and 2 years EDP Auditing experience in a large IBM mainframe environment. Professional certification or continued professional education is preferred.

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NCCI offers an attractive starting salary with regular reviews and a superior benefits package including relocation. For immediate consideration, please send resume with salary requirements in confidence to C. Popovic, NCCI, 750 Park of Commerce Drive, Boca Raton, FL 33487. NCCI maintains a drug free and smoke free work environment. We are an equal opportunity employer m/f.

NCCI National Council on Compensation Insurance

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Information Systems

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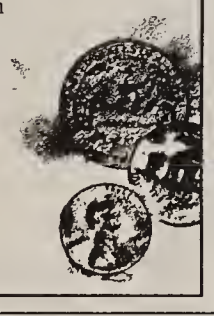

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As the leader in the dynamic telecommunications industry, Sprint is constantly developing new systems and adapting current ones to anticipate change. The team of more than 500 professionals at our Las Colinas data center are using state-of-the-art hardware, software and methods to develop a variety of custom business applications to support our worldwide network. If you are an experienced computer professional who thrives on change and likes the idea of contributing to the success of a technology driven company, you owe it to your career to explore the opportunities at Sprint. We currently have openings for experienced professionals with the following backgrounds.

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Responsible for the management of large scale, multi-location, multi-platform database environment. Specifically the overseeing of conceptual, logical, and physical design through the use of CASE technology; database platform selection; physical structure implementation; and 24-hour support. To qualify, you must have 10+ years' experience in Information Services; experience in at least 3 computer environments; and managerial knowledge of data administration, database administration, information engineering, and CASE technology.

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Requires a minimum of 7 years' systems development experience in a large-scale IBM environment including at least 2 years DBA experience and 2 years management experience. A working knowledge of DB2, ADABAS, or TERADATA is highly desirable.

Data Base Administrators

ADABAS: Minimum of 5 years DBA experience with a strong knowledge of ADABAS V5, Natural 2.1, Predict V3 and physical file design. Knowledge of Natural Construct, Natural OS/2, Gateway, Natural Connection, and CICS and COBOL direct calls highly desirable.

DB2: Minimum of 2 years' DBA experience with a strong knowledge of DB2. Knowledge of DB2AM, DB2ALTER, and other data base CASE tools is preferred.

TERADATA: Minimum of 2 years DBA experience with a strong knowledge of TERADATA structures. Knowledge of Database CASE tools is preferred.

Data Analysts

Requires a thorough knowledge of data analysis, normalization and logical design techniques gained by at least 3 years of practical experience. Knowledge of CASE tools is essential, ADW is desirable.

IE Consultants/Analysts

Experience in model driven application development using integrated CASE with emphasis in data/process model development, rapid prototyping, deriving design specifications from analysis models, facilitation and project planning.

All of the above positions require a Bachelor's degree in Computer Information Systems, Business Administration, or related field (related work experience will substitute) and excellent communication, people, and project management skills.

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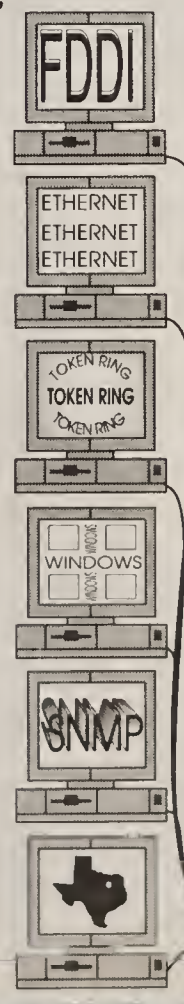
* LAN TIMES RECOMMENDED FOR NETWORKING 1991

* PC MAGAZINE EDITORS' CHOICE November 12, 1991



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Communications Systems Engineers – Positions require a BSEE (MSEE preferred) and 6 years of experience in the calculations and trade analysis of complex communications systems, including link budgets, DSP, data/network protocols and modem implementations.

Send your resume and salary history to: Locke Alderson, Sr. Staffing Representative, E-Systems, Garland Division, Department 41, P.O. Box 660023, Dallas, Texas 75266-0023.

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- Client/Server Administrator
- Data Dictionary Implementation
- IMS DB/DC
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If you have an interest in being a part of MTW, and possess skills related to the above, please call **1-800-669-9689** or fax your resume to **(816) 471-7918**, or mail your resume to: **MTW Corporation, 2300 Main/Suite 790, Attn: Chuck Austin, Kansas City, Missouri 64108-2415.** Equal Opportunity Employer.

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- **GEOSQL**
- **IE APPLICATIONS MANAGER**
- **ORACLE**
- **IDMS, ADS/O**
- **ADABAS, NATURAL 2**
- **DB2/SQL**
- **IMS DB/DC**
- **TELON**
- **CSP**
- **AS/400, RPG III**
- **VAX/VMS SYS. MGR.**
- **INTERGRAPH, C, MDL**

Interested principals should call or write:

STAFFWARE

111 North Loop West, Suite 800
Houston, Texas 77008
(713) 880-0232
(713) 880-8938 fax

Sprint, known for its exclusive fiber optic telecommunications network, is committed to being the premier provider of long distance voice, data, and video services worldwide. In support of this goal, Sprint has developed one of the largest Information Services groups in the nation. Located in Las Colinas, we are currently seeking the following positions:

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Requires a minimum of 5 years systems development experience in application systems testing. Knowledge of structured methodologies and project management software required. Also required is a strong results-oriented history with emphasis on being able to bring diverse organizations together for common objectives.

Analysts and Programmers

If your technical profile includes at least three years of experience developing business applications with one of the following skill sets, we would like to hear from you.

- COBOL II, DB2, CICS, Microfocus COBOL, ADW
- C, OS/2, GUI and/or client/server systems
- Natural 2, ADABAS

All of the above positions require a Bachelor's degree in Computer Information Systems, Business Administration, or related field and excellent communication, people, and project management skills.

Sprint offers competitive salaries plus a very attractive employee benefits package. If you meet the above qualifications and are interested in furthering your career with an industry leader, please stop by our booth or send your resume to: **Sprint, Human Resources Dept. CW9927, 1300 E. Rochelle Blvd., Irving, TX 75039. NO ENTRY-LEVEL POSITIONS AVAILABLE.** We are proud to be an EEO/AA employer, M/F/D/V.

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- Provide technical leadership and assist in developing direction for future computer requirements
- Develop, monitor, and administer the operating environments
- Manage and coordinate the activities of Systems Engineering functional areas
- Recommend hardware and software solutions for business and development activities
- Monitor inventory resources in support to all SDRC entities and coordinate allocation as appropriate
- Recruit and develop technical staff
- Forecast and meet financial commitments of the department

Qualifications:

- MS in Engineering/Computer Science or related field; MBA a plus
- Minimum 7 years' technical management experience with minimum 10 years' system administration experience in VMS or UNIX operating environment
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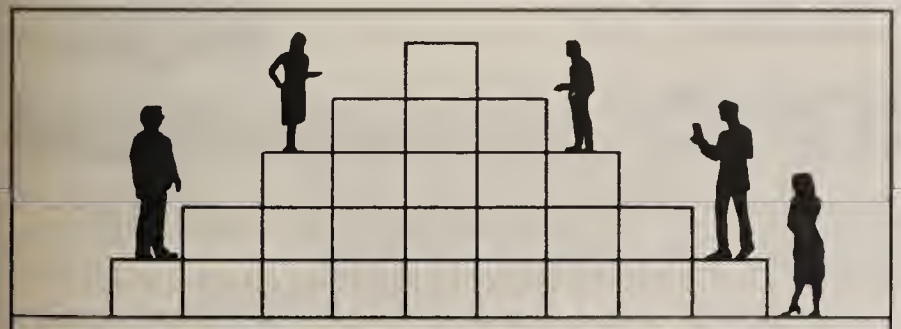

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Flashy ad, but what's it trying to say?

1 2 3 MAKING CHOICES

BY JOHN R. CARROLL
SPECIAL TO CW

I am no computer whiz, but I do know a thing or two about advertising, and I think it's fair to say that even if I were, say, a lifer information systems guy, I'd have a devil of a time upgrading my system if I relied on computer ads to help me.

For starters — and I don't mean to be politically incorrect about this — computer ads pretty much all look the same, sort of like a roomful of Elvis impersonators. They're slick, flashy, hairy-chested in their aggressiveness and constantly boasting about their performance.

Mostly they sing one of three tunes: price, speed and gimcracks. Of course, the look of the ads has even less variety: You get your choice of computer screens, computer screens or computer screens, plus more arrows than Custer's last stand.

To top it all off, they include enough techno-speak to give Einstein a retroactive headache. The typical headline goes something like this: "486-33/50 ISA system with noninterlaced SVGA monitor." No doubt that's music to R2-D2's ears, but how many other people can dance to it?

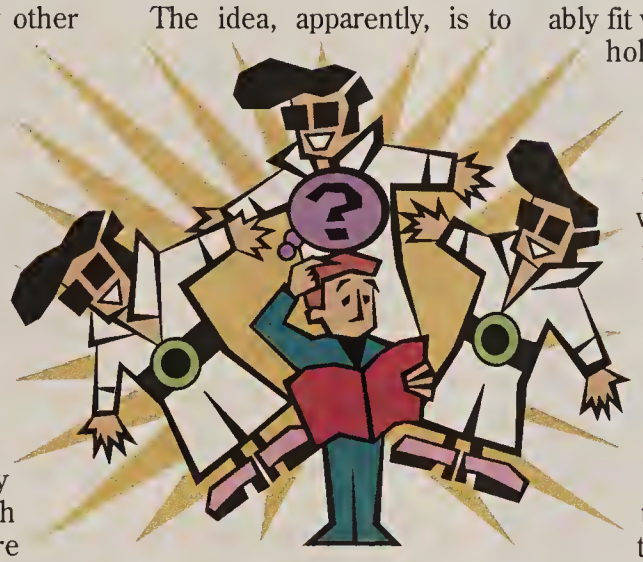
Creative confusion

Things get even more confusing when the ads go for the creative approach. In one ad, a dog is chomping on a printout under the headline "Delicious output." Now it's anyone's guess what that has to do with the price of printers.

Another shows a guy standing on his hands, with a portable computer where one of his forearms should be. The headline says, "Do you notice anything unusual about this man's computer?" Well, yeah — it's surgically attached to his arm. No doubt that's convenient for him, but it must be awful for his tailor. I'd like to know more about computer technology, but that kind of commitment is a little out of my league. Probably yours, too.

Some computer advertisers actually do make an attempt to explain their products in understandable terms, usually by employing similes: Finding the right system is likened to looking for a needle in a haystack; operating certain software systems is compared to trying to fit a square peg in a round hole.

The idea, apparently, is to



draw you into the ad with something familiar before numbing your brain with technospecifics. But to me, it's like buying a pig in a poke. Not only that, this technique can easily make you feel that your mental abilities never progressed past the grammar school level. That's a pretty loopy way to butter up your sales prospects.

Also very big in computer ads is Murphy's Law. Presumably advertisers invoke the time-honored law because it gives a company lots of problems to fix. Of course, Murphy's Law will inevitably strike your new system as well, and off you go again, looking for another fix. Overall, there's a certain circular appeal to this approach that would probably fit very nicely in that round hole we talked about earlier.

Go too far

As you can no doubt tell for yourself, I don't learn very much from the vast majority of computer ads. And I learn even less from the rare ads that stand out from the crowd.

Given the staggering number of companies vying for the reader's attention, it's no surprise that some will go off the deep end to be noticed. The problem is, once you notice the ad, you spend more time scratching your head than dialing the toll-free number.

There was one ad, for instance, that showed an old tinted photo of Richard Nixon shaking hands with Mao Tse-tung. The only line of copy said, "It's what we do for computers." What? Send them to China? A lot of good they will do me over there.

Another ad showed a farmhouse in the middle of nowhere with the funnel of a tornado sitting about two car lengths away. Right above the house is the tiny headline, "Hey, at least the data's safe." Are they trying to tell me I should store my data at a farmhouse in the tornado belt? I don't get it and probably neither do your users.

But the ad that really lost me was the one that showed a cow in the middle of a thoroughbred horse race. The jockey is laying the whip on old Bessie pretty good, but I suppose it paid off because right in there on the next page, the cow is in the winner's circle, with a blanket of carnations and a jubilant jockey on its back.

According to the headline, a particular brand of computer can put me in the same place.

Well, maybe I don't want some little guy hitting me with a whip every time I sit down at the computer. That's what editors are for.

In general, these ads appear to target someone who either had Bill Gates for a college roommate and got to keep his notes or grew up on a computerized farm (see cow ad). Everyone else might as well be reading the *Iliad*.

Carroll is president of Carroll Creative, Inc., an advertising consultancy in Boston, and an advertising critic for *Marketplace*, a nationally syndicated business show produced by American Public Radio.

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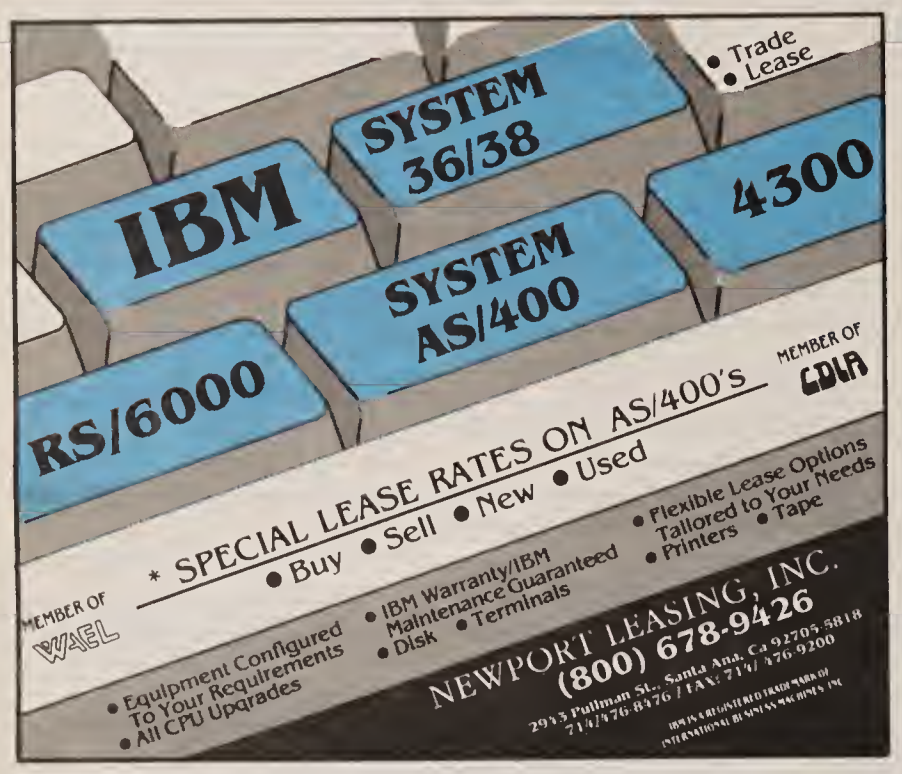

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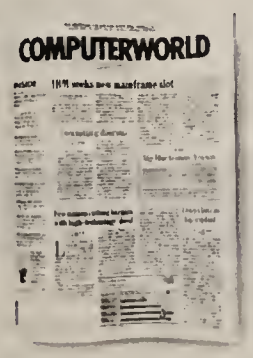

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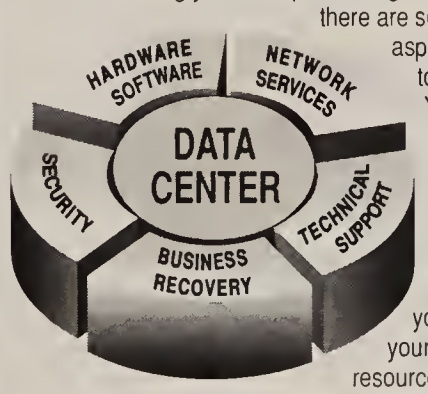

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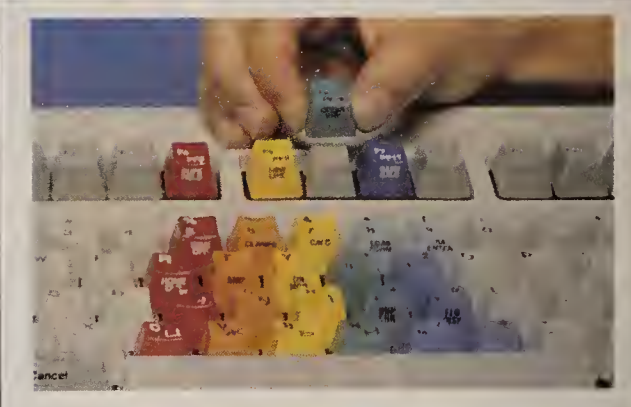

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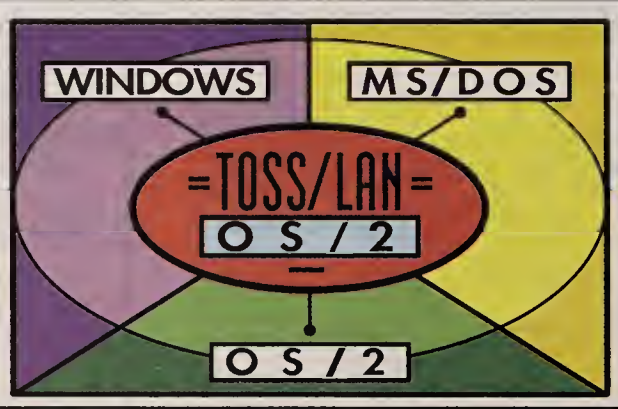

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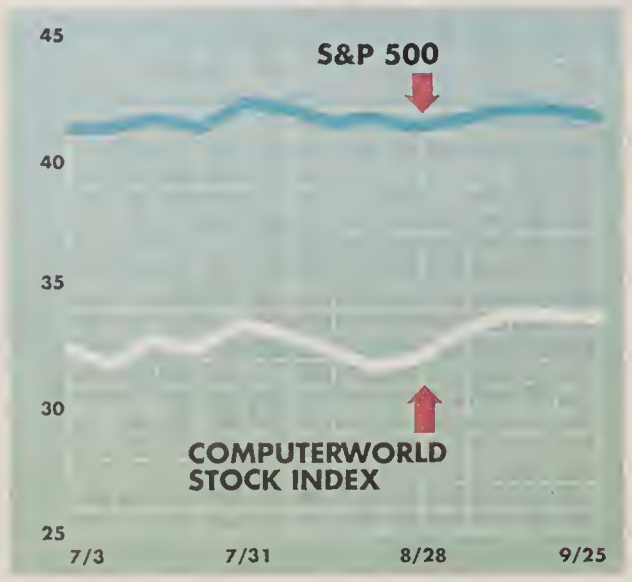

Industry Almanac

RECOMMENDATION CHANGES

UPGRADED FROM NEUTRAL TO OUTPERFORM: **Borland International, Inc.** (Shearson Lehman Brothers, Inc.). Business opportunities for Borland's (BORL) Quattro Pro for Windows spreadsheet have boosted the company's rating. Analyst David Readerman forecasted that combined fiscal year 1993 revenues for Quattro Pro for Windows and Quattro Pro for DOS will be $160 million, or 28% of Borland's revenue. It is also projected that during calendar year 1993, Quattro Pro for Windows' market share will grow beyond its present 9% revenue share of the $1.4 billion personal computer spreadsheet market. Borland is expected to push for more PC databases in its installed base and to unify Quattro Pro for Windows front-end analysis tools with Paradox for Windows' back-end database storage and manipulation engine.

SOFTWARE SURVEY

According to a recent survey conducted by the Software Publishers Association (SPA), there are strong economies of scale in a software firm's ability to run its business. Larger firms are reaping benefits, spending less on research and development (see table below) and reporting a median revenue per employee of $180,000. Smaller firms, with a median revenue per employee of $103,000, are spending more and getting less. "While size alone doesn't determine profitability, this study shows that larger software companies have a decided advantage in their financial operations. This does not mean that small companies are not profitable. But it does illustrate one of the challenges small software companies have in getting started," said David Tremblay, research director at the SPA.

Software costs

A list of expenses as a percentage of net revenue, by company size for software companies

	Small (under $5 million)	Large (over $30 million)
Research and development	16.5%	11.6%
Sales and marketing	38.7%	35.4%
Operating income	-1.8%	16.0%

Survey of 90 SPA members

Source: Software Publishers Association

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, SEPTEMBER 25, 1992

TOP PERCENT GAINERS

Micrografx Inc.	23.53
3 COM Corp.*	18.58
DSC Communications (H)	16.00
Printronix Inc.	15.00
Wang Labs Inc. (b)*	14.16
Tandy Corp.*	13.54
Advanced Logic Research	11.76
Data General Corp.	10.00

TOP PERCENT LOSERS

Rasterops (L)	-52.70
Exabyte (L)	-36.98
State of the Art (L)	-21.05
Wordstar	-18.75
Chips and Technologies	-17.65
Cognos Inc. (L)	-17.24
Gandalf Technologies Inc.	-16.67
Network General	-16.33

TOP DOLLAR GAINERS

Tandy Corp.*	3.25
3 COM Corp.*	2.63
Micrografx Inc.	2.00
DSC Communications (H)	1.50
Progress Software Corp. (H)	1.50
Policy Management Sys.	1.50
Sprint Corp.	1.38
Newbridge Networks Corp. (H)	1.25

TOP DOLLAR LOSERS

Exabyte (L)	-8.88
BMC Software Inc.	-5.63
Autodesk Inc.	-5.13
Wellfleet Communications (H)	-5.00
Rasterops (L)	-4.88
Adobe Systems Inc. (L)	-4.50
Motorola Inc.* (H)	-4.00
Borland Int'l Inc.*	-3.63

Exch	52-Week		Range	Sept. 25 Close	Wk Net Change	Wk Pct Change
Communications and Network Services						**Off 2.22%**
OTC	16.75	8.75	3 COM Corp.*	16.75	2.63	18.58
NYS	70.63	56.25	American Info Techs Corp.*	68.38	-0.13	-0.18
NYS	45.38	32.88	AT&T* (H)	43.50	-0.50	-1.14
OTC	4.25	0.75	Artel Communication Corp.	1.06	0.06	6.30
NYS	49.75	40.25	Bell Atlantic Corp.	48.13	-0.25	-0.52
NYS	55.50	43.38	Bellsouth Corp.	52.00	-0.13	-0.24
NYS	6.75	3.75	Bolt, Beranek & Newman	4.25	-0.25	-5.56
NYS	65.88	36.63	Cabletron Systems	60.50	-1.88	-3.01
OTC	31.00	17.50	Chipcom Corp.	26.75	0.38	1.42
OTC	56.25	18.63	Cisco Systems Inc. (H)	53.25	-1.25	-2.29
OTC	35.25	5.75	Compression Labs Inc.	6.88	-0.38	-5.17
OTC	3.38	0.88	Data Switch Corp.	1.75	0.00	0.00
NYS	23.63	14.13	Digital Comm. Assoc.* (L)	15.00	0.50	3.45
OTC	15.25	8.00	Digital Systems Int'l Inc.	9.75	-0.75	-7.14
OTC	10.88	3.63	DSC Communications (H)	10.88	1.50	16.00
OTC	10.88	4.75	Fibronix Int'l Inc.	5.63	0.00	0.00
OTC	37.50	10.50	Filenet Corp.	15.00	-1.75	-10.45
OTC	3.38	1.13	Gandalf Technologies Inc.	1.88	-0.38	-16.67
OTC	2.25	0.69	Gateway Communications	1.50	-0.13	-7.69
NYS	5.50	2.38	General Datacomm Inds.	3.25	-0.25	-7.14
ASE	5.88	0.50	Go Video	2.38	0.00	0.00
NYS	35.75	28.88	GTE Corp.*	33.13	-0.13	-0.38
NYS	70.63	50.00	ITT Corp.	64.00	-0.25	-0.39
OTC	36.25	25.25	MCI Commmunications Corp.	35.00	-0.25	-0.71
OTC	14.50	2.25	Microcom Inc.	3.25	0.13	4.00
NYS	18.25	9.50	Network Equipment Tech.*	10.88	-0.63	-5.43
OTC	25.50	8.00	Network General	10.25	-2.00	-16.33
OTC	20.00	8.50	Network Systems Corp.	11.38	-0.88	-7.14
OTC	20.25	5.63	Newbridge Networks Corp. (H)	19.75	1.25	6.76
NYS	49.25	32.63	Northern Telecom Ltd.*	32.63	-2.38	-6.79
OTC	65.00	35.50	Novell Inc.*	56.25	-1.25	-2.17
NYS	88.38	69.13	Nynex Corp.*	82.13	-1.25	-1.50
OTC	37.50	16.50	Octel Communications Corp.	21.00	-2.00	-8.70
OTC	9.88	4.00	Penril Data Comm. Ntwks.	5.13	-0.25	-4.65
OTC	53.00	10.25	Picturetel Corp.	14.00	-0.50	-3.45
OTC	18.75	8.50	Proteon Inc. (L)	8.50	-1.63	-16.05
NYS	29.50	12.88	Scientific Atlanta Inc.	27.50	-1.00	-3.51
NYS	69.00	53.75	Southwestern Bell Corp.	66.13	0.00	0.00
NYS	26.38	20.75	Sprint Corp.	24.00	1.38	6.08
OTC	15.63	4.00	Standard Microsystems Corp	14.88	0.13	0.85
OTC	43.00	14.25	Synoptics Communications (H)	40.00	-2.00	-4.76
NYS	40.00	32.88	US West Inc.	37.88	0.38	1.00
OTC	46.75	24.00	Wellfleet Communications (H)	41.00	-5.00	-10.87
PC and Workstations						**Off 2.10%**
OTC	14.50	4.00	Advanced Logic Research	4.75	0.50	11.76
OTC	70.00	42.75	Apple Computer Inc.*	45.50	-1.00	-2.15
OTC	32.25	11.25	AST Research Inc.*	15.00	-1.50	-9.09
NYS	19.25	6.75	Commodore Int'l	7.38	-0.13	-1.67
NYS	35.75	22.13	Compaq Computer Corp.*	33.63	-1.25	-3.58
OTC	29.00	13.91	Dell Computer Corp.	28.13	-0.13	-0.44
OTC	7.75	1.00	Everex Systems Inc. (L)	1.44	-0.06	-4.13
NYS	34.00	21.25	Harris Corp.	32.25	-0.38	-1.15
NYS	85.00	44.63	Hewlett-Packard Co.*	57.75	-1.75	-2.94
NYS	29.75	14.13	Silicon Graphics	18.50	-1.75	-8.64
OTC	35.88	20.75	Sun Microsystems Inc.*	30.75	-0.50	-1.60
NYS	31.25	22.25	Tandy Corp.*	27.25	3.25	13.54
NYS	11.13	5.13	Zenith Electronics	6.25	-0.38	-5.66
OTC	25.50	2.75	Zeos International Ltd.	4.75	-0.75	-13.64
Large Systems						**Off 1.11%**
ASE	20.63	8.88	Amdahl Corp.* (L)	9.00	-0.38	-4.00
NYS	16.38	5.25	Convex Computer	5.50	-0.75	-12.00
OTC	19.63	1.88	Cray Computer	3.00	0.00	0.00
NYS	52.25	22.75	Cray Research Inc.*	25.75	-0.13	-0.48
NYS	22.50	7.13	Data General Corp.	11.00	1.00	10.00
NYS	65.50	33.25	Digital Equipment Corp.*	40.13	0.75	1.90
NYS	104.75	81.63	IBM*	82.25	-1.25	-1.50
OTC	13.25	7.50	Kendall Square Research	8.00	-1.25	-13.51
NYS	121.25	88.25	Matsushita Electronics	94.00	-2.00	-2.08
OTC	17.50	6.75	Pyramid Technology	8.25	-0.25	-2.94
OTC	17.88	8.50	Sequent Computer Sys.	16.38	0.25	1.55
OTC	18.38	5.00	Sequoia Systems Inc.	7.00	-1.00	-12.50
NYS	54.25	37.38	Stratus Computer Inc.*	43.88	-2.50	-5.39
NYS	15.13	9.50	Tandem Computers Inc.*	11.25	0.38	3.45
NYS	11.75	3.63	Unisys Corp.*	9.38	0.50	5.63
ASE	7.50	0.25	Wang Labs Inc. (b)*	0.50	0.06	14.16
Software						**Off 6.21%**
OTC	68.50	28.25	Adobe Systems Inc. (L)	28.25	-4.50	-13.74
OTC	13.25	2.50	Al Corp.	3.50	0.00	0.00
OTC	45.00	11.50	Aldus Corp.	12.75	-0.25	-1.92
OTC	19.75	8.50	American Software Inc.	9.00	-0.63	-6.49
OTC	20.00	9.75	Ask Computer Systems	13.13	-2.13	-13.93
OTC	52.00	23.25	Autodesk Inc.	43.38	-5.13	-10.57
OTC	37.75	7.00	Bachman Info. Systems	7.00	0.00	0.00
OTC	42.50	32.00	BGS Systems Inc.	37.25	-1.00	-2.61
OTC	79.00	37.25	BMC Software Inc.	53.13	-5.63	-9.57
OTC	20.50	9.25	Boole & Babbage	18.50	-0.38	-1.99
OTC	86.75	35.00	Borland Int'l Inc.*	38.25	-3.63	-8.66
OTC	11.00	3.63	CE Software	4.25	-0.25	-5.56
ASE	19.50	7.34	Cheyenne Software Inc. (H)	18.63	0.00	0.00
OTC	17.88	6.00	Cognos Inc. (L)	6.00	-1.25	-17.24
NYS	17.00	7.50	Computer Associates*	15.00	-0.50	-3.23
NYS	12.38	9.75	Computervision Corp.	9.88	-0.88	-8.14
OTC	20.00	6.75	Comshare Inc. (L)	7.50	0.25	3.45
OTC	47.88	6.50	Easel Corp.	8.00	0.00	0.00
OTC	25.50	11.50	Group I Software	13.50	-1.00	-6.90
OTC	6.63	3.50	Hogan Systems Inc.	5.00	-0.25	-4.76
OTC	36.25	18.50	Information Resources	26.13	-0.38	-1.42
OTC	22.00	3.88	Informix Corp.	20.50	-0.50	-2.38
OTC	22.38	12.50	Intergraph Corp.	14.25	-0.50	-3.39
OTC	15.00	6.25	Interleaf Inc.	9.25	-0.25	-2.63
OTC	20.25	9.88	Intersolv Inc.	16.25	-1.13	-6.47
OTC	21.38	9.88	Knowledgeware Inc.	9.88	-1.88	-15.96
OTC	48.25	27.25	Legent Corp.*	46.00	-0.25	-0.54
OTC	38.75	15.50	Lotus Development*	19.13	-0.63	-3.16
OTC	7.38	1.88	Meca Software	3.00	0.13	4.35
OTC	22.25	6.50	Mentor Graphics	7.50	-0.75	-9.09
OTC	37.25	27.25	Micro Focus	35.38	0.13	0.35
OTC	20.50	6.50	Micrografx Inc.	10.50	2.00	23.53
OTC	88.84	57.50	Microsoft Corp.*	78.75	-1.13	-1.41
OTC	21.13	12.00	Oracle Corp.*	19.00	-1.25	-6.17
OTC	49.75	15.50	Parametric Technology	45.00	-2.50	-5.26
OTC	11.00	3.50	Phoenix Technologies	4.50	-0.38	-7.69
OTC	25.25	12.13	Platinum Technology	13.25	-1.75	-11.67
OTC	48.25	29.00	Progress Software Corp. (H)	47.50	1.50	3.26
OTC	26.63	4.00	Quarterdeck Office Sys.	4.25	-0.38	-8.11
OTC	32.75	11.75	Rainbow Technologies Inc.	17.75	-0.50	-2.74
OTC	22.75	4.38	Rasterops (L)	4.38	-4.88	-52.70
OTC	17.25	5.38	Ross Systems	6.25	-0.50	-7.41
OTC	12.25	8.50	Sapiens USA Inc.	10.13	-1.63	-13.83
OTC	26.25	7.50	Software Publishing Corp.	9.25	-1.25	-11.90
OTC	8.50	2.00	Software Toolworks Inc.	3.00	0.00	0.00
OTC	7.25	1.75	Spinnaker Software	2.25	-0.25	-10.00
OTC	16.50	3.25	State of the Art (L)	3.75	-1.00	-21.05
NYS	25.25	13.75	Sterling Software Inc.	17.38	-0.13	-0.71
OTC	30.00	9.25	Struct. Dynamics Research	9.25	-1.00	-9.76
OTC	36.75	16.00	Sybase Inc.	36.50	0.75	2.10
OTC	51.00	10.25	Symantec Corp.	10.25	-0.50	-4.65
NYS	15.50	5.25	Systems Center Inc.*	5.63	-0.13	-2.17
OTC	34.25	13.00	System Software Assoc.	21.50	-3.50	-14.00
OTC	23.75	14.50	Walker Interactive Systems	16.75	-1.50	-8.22
OTC	6.63	1.63	Wordstar	1.63	-0.38	-18.75
Semiconductors						**Off 3.80%**
NYS	21.50	7.38	Advanced Micro Devices	11.50	-0.75	-6.12
NYS	11.13	7.00	Analog Devices Inc.	10.38	-0.50	-4.60
OTC	12.00	6.75	Atmel Corp.	11.13	0.25	2.30
OTC	14.13	3.25	Chips and Technologies	3.50	-0.75	-17.65
NYS	21.50	7.38	Cypress Semiconductor Corp	8.88	0.13	1.43
NYS	12.25	6.25	Dallas Semiconductor (H)	11.25	-0.38	-3.23
OTC	68.75	38.50	Intel Corp.*	64.75	-0.50	-0.77
NYS	9.88	4.88	LSI Logic Corp.	6.38	-0.25	-3.77
NYS	22.38	12.13	Micron Technology	14.50	-0.13	-0.85
NYS	91.50	54.00	Motorola Inc.* (H)	86.00	-4.00	-4.44
NYS	12.38	3.88	National Semiconductor*	10.88	-1.25	-10.31
OTC	27.00	8.25	Sierra Semiconductor	9.88	-0.63	-5.95
NYS	45.00	26.00	Texas Instruments* (H)	43.75	-1.25	-2.78
OTC	10.50	6.00	VLSI Technology	7.75	-0.13	-1.59
OTC	7.25	2.13	Weitek	3.13	0.00	0.00
ASE	5.63	2.00	Western Digital Corp.	4.50	-0.13	-2.70
OTC	32.50	17.25	Xilinx	18.00	-2.50	-12.20
OTC	11.50	6.00	Zilog Inc.	8.00	0.38	4.92
Peripherals and Subsystems						**Off 5.16%**
OTC	10.00	2.88	Archive Corp.	7.00	-0.63	-8.20
OTC	26.75	13.75	Banctec Inc.	25.25	-1.25	-4.72
OTC	23.50	8.63	Cambex Corp.	11.50	-1.13	-8.91
ASE	12.25	5.00	Cognitronics Corp.	11.38	-0.13	-1.09
NYS	23.88	12.50	Conner Peripherals*	20.25	-0.63	-2.99
ASE	19.66	4.66	Dataram Corp.	6.00	-0.25	-4.00
NYS	20.63	5.88	EMC Corp. (H)	19.25	-1.25	-6.10
OTC	8.38	4.75	Emulex Corp.	5.63	-0.25	-4.26
OTC	23.00	14.25	Evans & Sutherland	16.00	-0.13	-0.78
OTC	40.63	14.50	Exabyte (L)	15.13	-8.88	-36.98
OTC	29.50	15.75	Intelligent Info. Systems (H)	27.38	-0.38	-1.35
OTC	11.25	4.75	Iomega Corp.	6.13	-0.13	-2.00
OTC	34.75	10.75	IPL Systems Inc.	12.38	-0.13	-1.00
OTC	24.50	10.75	Komag Inc.	15.25	-0.50	-3.17
OTC	15.25	4.38	Maxtor Corp.*	13.63	-1.00	-6.84
OTC	12.63	5.75	Micropolis Corp.	8.75	-1.50	-14.63
NYS	103.75	85.38	3M Co. (H)	100.75	-0.50	-0.49
OTC	6.75	3.50	Printronix Inc.	5.75	0.75	15.00
NYS	26.75	7.00	OMS Inc.	8.25	-0.13	-1.49
OTC	18.00	8.88	Quantum Corp.	13.50	-1.50	-10.00
OTC	12.75	3.75	Radius Inc.	4.38	-0.38	-7.89
NYS	12.88	5.88	Recognition Equipment	10.75	-0.50	-4.44
OTC	13.13	5.38	Rexon Inc.	10.50	-0.75	-6.67
OTC	17.63	7.25	Seagate Technology*	13.13	-1.63	-11.02
NYS	78.00	26.63	Storage Technology*	26.63	-2.63	-8.97
NYS	25.63	16.00	Tektronix Inc.	22.13	0.75	3.51
NYS	82.25	59.00	Xerox Corp.	78.75	0.13	0.16
Services						**Off 2.25%**
OTC	19.38	11.66	American Mgmt. Systems*	18.63	-0.13	-0.67
NYS	5.38	2.88	Anacomp Inc.	3.13	0.00	0.00
OTC	19.00	12.50	Analysts Int'l	18.75	0.75	4.17
NYS	49.00	33.88	Auto Data Processing*	46.63	-0.50	-1.06
NYS	15.50	7.06	Ceridian Corp.	14.13	0.13	0.89
NYS	24.16	12.50	Comdisco Inc.*	16.13	-0.13	-0.77
OTC	13.50	7.75	Computer Horizons	9.13	-0.13	-1.35
NYS	84.88	57.00	Computer Sciences*	69.50	0.75	1.09
NYS	10.13	7.00	Computer Task Group	8.00	0.00	0.00
OTC	40.50	15.00	CompUSA Inc.	32.00	-3.00	-8.57
OTC	19.25	6.00	Corporate Software	8.50	-1.00	-10.53
OTC	30.75	8.50	Egghead Discount Software (L)	8.50	-0.75	-8.11
NYS	33.06	23.38	General Motors E (EDS)*	30.25	0.75	2.54
OTC	30.38	6.25	Intelligent Electronics	10.25	-0.38	-3.53
OTC	14.88	4.00	Merisel	8.25	0.13	1.54
OTC	15.75	7.00	Microage Inc.	9.00	-0.75	-7.69
OTC	32.00	17.66	Paychex (H)	31.25	-0.25	-0.79
NYS	76.50	51.75	Policy Management Sys.	75.50	1.50	2.03
NYS	44.75	24.88	Reynolds and Reynolds (H)	44.25	-0.38	-0.84
OTC	32.00	21.25	SEI Corp.	24.50	-0.75	-2.97
OTC	24.38	16.88	Shared Medical Systems	21.63	-0.38	-1.70
OTC	30.00	13.50	Sungard Data Systems	26.75	-2.25	-7.76
NYS	3.63	1.13	Ultimate Corp.	1.50	-0.13	-7.69

KEY: (H) = New annual high (L) = New annual low

* Companies tracked in Computerworld Stock Index

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IN BRIEF

HP revises Q1 results

■ **Hewlett-Packard Co.** last week said it would restate fiscal 1992 earnings to reflect changes in how it accounts for retiree medical coverage and income taxes. Medical coverage changes will result in a one-time, $322 million after-tax charge for the first fiscal quarter of 1992, which ended Jan. 31, transforming a $302 million profit into a $30 million net loss. Changes in how the company accounts for income taxes were spread out throughout fiscal 1992, which ended July 31, and will have no material impact on restated earnings, the company said.

■ **CompuAdd Corp.** in Austin, Texas, has protested the U.S. Air Force's award of a $740 million contract to **Zenith Data Systems** for 300,000 Intel Corp. I486-based personal computers, related equipment and office automation software. The contract, called Desktop IV, was split last year between CompuAdd and another vendor but was withdrawn when a number of bidders complained they were knocked out of the running unfairly.

■ Cabletron Systems, Inc. last week posted robust second-quarter net profits of $19.3 million, up 27% from the same period last year. Revenue for the quarter ended Aug. 31 was $96.7 million, up 39% from 1991's corresponding period, the Rochester, N.H., company said.

Short takes

Icot Corp., a San Jose, Calif.-based peripherals vendor, said it expects to post "a significant loss" in its first fiscal quarter, ending Oct. 24, due to a slowdown in orders from **IBM**, its largest customer.... Adobe Systems, Inc. in Mountain View, Calif., has made an equity investment of an undisclosed amount in **Verity, Inc.**, a Mountain View-based developer of document retrieval software.

Oracle posts $33.5 million loss

Though revenue grows, new pay-as-you-go accounting rule kills profits

BY JEAN BOZMAN
CW STAFF

REDWOOD CITY, Calif. — Oracle Corp. said last week it took a onetime $43 million after-tax charge for more than $60 million in software orders deemed uncollectible in its first fiscal quarter, transforming a $9.9 million operating profit into a $33.5 million loss.

Oracle took the charge as part of its switch to the software industry's new pay-as-you-go accounting system, devised by the Financial Accounting Standards Board and enforced by the Securities and Exchange Commission.

"It normalizes their sales practices [with the industry's]," noted Rich Edwards, a senior analyst at Robertson, Stephens & Co. in San Francisco.

Quick on the books

In the 1980s, analysts said, Oracle routinely sold multimillion-dollar contracts for several years' worth of software and booked the revenue immediately.

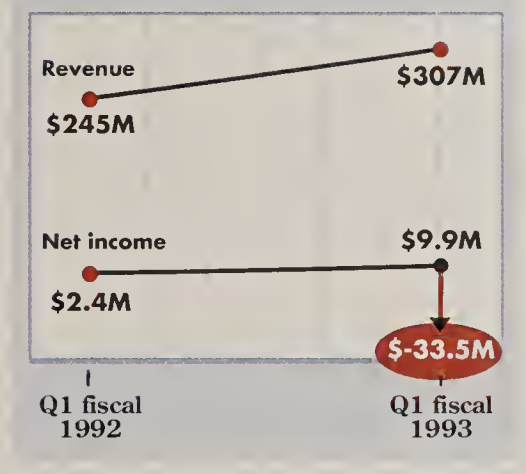
The loss, among the few quarterly deficits in Oracle's 15-year history, obscured what was a reasonably strong period.

Oracle posted $307 million in revenue for the quarter ended Aug. 31, up 25% from the comparable time period last year. Much of the growth, however, was attributed to a currency exchange boost from the company's strong European sales.

Some analysts said the numbers in Oracle's first-quarter report do not paint the entire picture of its global business.

By the numbers

A $43 million after-tax charge pummeled Oracle's first-quarter income from roughly $10 million (an increase of more than 300% from the same period last year) to a $33.5 million loss



Out of sorts

"You have to sort through onetime events, like currency exchange rates and a re-recognition of revenue [for past sales], to see how well Oracle did," said Terence Quinn, a research vice president at Kidder Peabody & Co. in New York.

Licenses for IBM mainframe and proprietary versions of Oracle continued to decline, according to Quinn, while those for desktop products were relatively flat. Sales of Unix products contributed heavily to growth.

MTI files suit against DEC over storage patent validity

BY MELINDA-CAROL BALLOU
CW STAFF

ANAHEIM, Calif. — Digital Equipment Corp.'s struggles with third-party storage vendors are not subsiding, despite lawsuits and licensing programs by DEC to quell them.

Micro Technology, Inc. fired its own salvo last week when it disclosed a countersuit filed against DEC that claims DEC's Digital Storage Systems Interconnect (DSSI) and Computer Interconnect storage patents are invalid.

DEC instituted a DSSI licensing program earlier this year — which increased in price last month — and the company allows third parties to license the technology for a royalty fee.

DEC is also expected to establish a Computer Interconnect licensing program within two weeks in an attempt to gain royalties from third parties implementing products that use those technologies.

While more than 25 vendors signed on to the licensing programs, Micro Technology did not. Last year, DEC sued Micro Technology in Germany over a separate matter: DEC's Standard Disk Interconnect/Standard Tape Interconnect (SDI/STI) storage patents.

DEC does not offer a licensing program for its SDI/STI technology.

"DEC was making it public that we had not signed up for the DSSI program, which cast some doubt on our company's credibility, and the market needed a response from us," said Tom Raimondi, president of product marketing at Micro Technology, explaining the rationale behind the lawsuit.

Plenty of evidence

Raimondi said Micro Technology has documented information showing that other vendors implemented the DSSI and Computer Interconnect communications protocols before DEC did and that they are in the public domain.

He added that for Micro Technology to sign a licensing agreement whereby the company acknowledges the validity of the patents and pays royalties when it believes the patents to be invalid is not an option. "We felt that we had no choice but to seek a court opinion," Raimondi said.

DEC officials said the suit is without merit.

Micro Technology also announced a product designed to insulate customers from the potential consequences of the SDI/STI dispute. Dubbed the MSD13C, the new SDI disk interface does not use any of the technology in question, Micro Technology officials said.

A separate U.S. lawsuit filed by DEC against Micro Technology over the SDI/STI technology is in the discovery stages at this time.

Success not assured

Industry analysts were somewhat skeptical of the countersuit's prospect for success.

Paul Wolfstetter, program analyst for large systems at Gartner Group, Inc., a market research firm in Stamford, Conn., said that "if DEC were to lose, it would mean substantial exposure to them, but I think DEC is a big enough company to know what they have and have not [in terms of valid technology]."

Added John Donovan, an analyst at WorkGroup Technologies, Inc., a Hampton, N.H., market research firm: "When DEC does an interface, it's a very precise standard, and if you comply with it, I suspect that it would be hard to avoid (infringement), since they don't leave very much room for creativity."

McAfee to go public

BY JAMES DALY
CW STAFF

SANTA CLARA, Calif. — McAfee Associates, Inc., the antivirus software maker that has carved a niche for itself by giving away its software, hopes to go public next month, pending the completion of an initial stock offering.

Unlike competitors that sell shrink-wrapped software in retail stores, McAfee Associates' set of virus detection, disinfection and protection programs are distributed as shareware on electronic bulletin boards. Founder John McAfee then relies on honest users to voluntarily send in between $25 and $35 per program.

That strategy has been successful: The prospectus for the initial public offering (IPO) says the company has already snagged 10,000 licenses at corporations.

McAfee's offerings include Scan, a memory- and file-scanning program with some disinfection capabilities, the Clean disinfection program and VShield and Sentry, which are resident file infection and activity checking programs. The firm also produces several utilities packages.

McAfee has long maintained that antivirus software is custom-made for electronic distribution because it needs to be regularly updated.

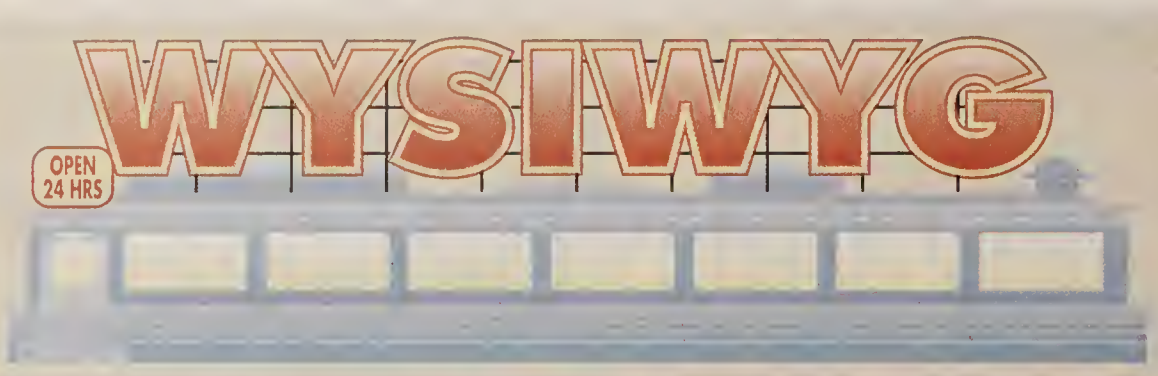
Small but mighty

The company is still relatively small — having only 26 full-time employees and reporting revenue of $6.3 million in the first half of the year — but has profited from increasing consumer awareness about viruses.

Next month's IPO is expected to offer 2 million shares, which would leave the firm with 11 million outstanding shares after the offering. If the price of the stock reaches its expected midrange of $13 to $15 a share, it will also make McAfee a very rich man. Initially, he will sell stock worth $7 million and retain stock valued at about $63 million.

However, the highly public McAfee has come under some criticism in recent years for spending more time hyping the virus scare than attending to his products.

"One is still left with the impression that the program... could benefit from more attention to function and less to the promotion of the services of McAfee Associates," wrote Christopher Feudo in "The Computer Virus Desk Reference."



THE OLD SWITCHEROO

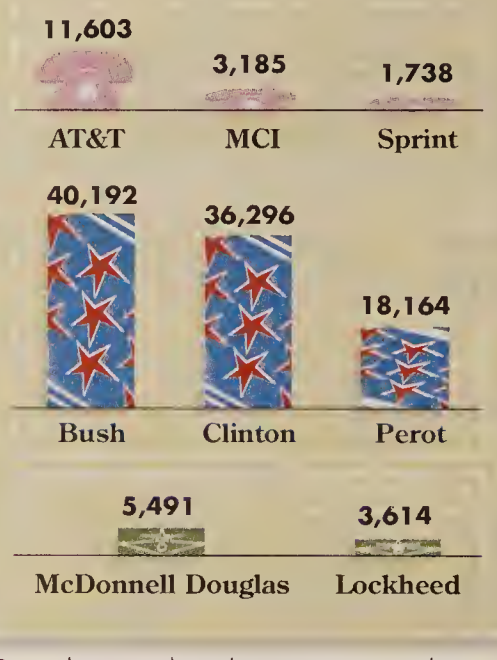
Police have arrested a Florida couple suspected of using their portable bar-code label printer to put false price codes on merchandise in stores around the country. The alleged swindle involved applying false bar codes with much lower prices, buying the items at the reduced price from inexperienced cashiers and later returning the merchandise for full value (with a fake receipt). The suspects — who may have been clearing $6,000 a day — were caught by an alert clerk at a Kmart near St. Paul, Minn.

It had to happen

Barry Watkins, a congressional wanna-be from Illinois and also the president of a software company in Des Plaines, Ill., has a unique approach to fund-raising based on his computer expertise. To drum up funds, he's developed The Dan Quayle Spelling Checker, which comes bundled with the Danasaurus thesaurus and a selection of Quayle-Lite quotes. It's being marketed through a toll-free number: (800) SOFTHEAD.

Press Rivals

The number of times each rival has been mentioned in a random sample of the popular press during the summer months



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TECH TRIVIA

1. The last two letters in the names of many early computer companies were "AC," as in Illiac and Eniac. What did the letters AC stand for?
2. In the 1959 movie "Desk Set," Katherine Hepburn and her staff were worried they might be replaced by a computer Spencer Tracy was installing. What was the name of that computer? Emorac, Calla Lilly One or Univac?
3. Some computer people are a little strange. According to the book *Bit by Bit*, one computer notable was known for using a tie to hold up his pants. Was that person Charles Babbage, Steve Wozniak or Alan Turing?

ANSWERS

1. Automatic computer 2. Emorac 3. Charles Babbage

Sources: *Minneapolis-St. Paul Star Tribune*; The Delahaye Group, Inc.; special thanks to the Computer Museum, Boston

The 5th Wave

"NO, NO! YOU HIGH-FIVE THEM ON THE HAND! THE HAND! NOT THE FACE!"

INSIDE LINES

Diamond in the rough

▶ If it's true that the day of the megadeal is in decline in the outsourcing business, then EDS may have bucked the trend in one recent contract. Merrill Lynch analyst Stephen McClellan estimates that the company's deal with Household Credit Services to provide processing services for EDS parent General Motors' new GM Card credit card could blossom into a $500 million revenue stream if the card takes off.

Everybody's doing it

▶ Now that Compaq's ProLinea line appears to be a roaring success, entry-level product lines are popping up like mushrooms after a rain. The latest entry is from NEC. Sources say that Oct. 5 will see the unveiling of a broad family of computers that are slated to compete with Compaq's line. Prices will be at least competitive and may even be slightly below average.

Another dimension

▶ Speaking of ProLinea, Compaq isn't the only company with product availability problems. Parts of Dell's Dimension line is backlogged, sources say, and the company's SLI notebook, introduced in June, has missed its umpteenth shipping date — this time Sept. 21. Sources say the product is not expected to ship until Christmas, and at least one user says he switched to a Contura notebook because of the glitch.

Nothing to write home about . . . yet!

▶ While Compaq doesn't yet have a pen-based system, it does have people working on one, and they were at the Pen Expo looking at everything, including operating environments such as CIC's PenDos and Grid's PenRight. Toshiba officials hinted that by first-quarter next year, they, too, will have a pen-based system on the market, probably very similar to a system their company just announced in Japan.

Shooting quivers

▶ Dauphin, which announced a color-based pen system at Pen Expo, also displayed a mockup of a roughly 6- by 8-in. system it plans to ship next year. Sources close to the company said the product will feature Intel's coming 3.3V I486SL at the core of a new system that features longer battery life. They also said it may use HP's impending 1.3-in. hard drive.

GUI with a gimmick

▶ Ever wonder why no one thinks palmtops will use GUIs? It has a lot to do with the icons being too small to read. So IBM is working on a pen device with a built-in magnetizer that will explode icons so they can be read. The product is still too slow, said Gordon Arbeitman, senior programmer of pen systems.

Cross currents

▶ HP has entered into discussions with Legent to port at least some of Legent's systems software cache onto HP's HP/UX environment. In addition to CA, HP already has similar deals with Dun & Bradstreet, Software AG and Cincom Systems. Unix systems management leader Tivoli Systems is also planning to ally with HP.

Merry Christmas!

▶ Those shareholders willing to interrupt their holidays will get to speak at Wang's annual meeting, slated for Dec. 23, but the pre-Christmas gathering isn't likely to be very festive. Wang common stock now trades at about 50 cents per share, having plummeted 93% from a 52-week low of $7.50.

A network manager looking for a new job recently knocked on the door of The C.I.T. Group, a New York bank co-owned by Manufacturers Hanover and Japan's Dai-Ichi Kangyo Bank. He filled out the standard forms while waiting for the interview to begin. But when he got to the end of the application, he found a disturbing note: "Your employment can be terminated at any time, for any reason." Although he was offered a position, he declined. The money wasn't good enough, he said. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld*'s 24-hour voice-mail tip line at (508) 820-8555.*

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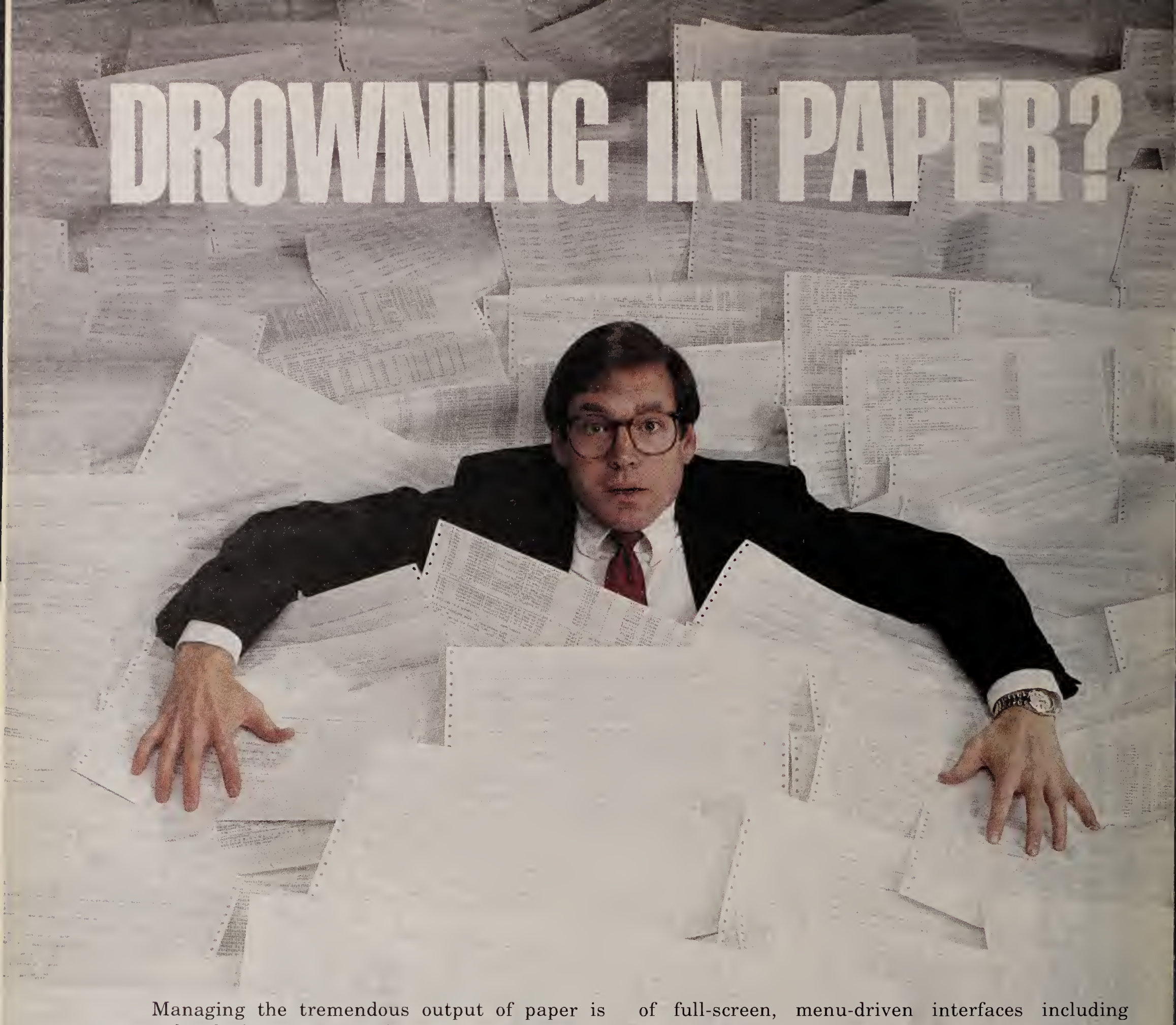
DROWNING IN PAPER?



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